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Nº 12

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Archive

The Subscription Magazine for Archimedes Users



Autumn Review Special

Using Outline Fonts

Optimising 'C' Programs – Part 3

Using the PC Emulator – Part 5

Reviews: Superior Golf, Alien Invasion, ArcDFS, Maths Pack 1, MultiFS, !Splice, !Tween, Inertia, Fancy Labeller, !Help Teachers' Companion, ArchieTeX, PenDown, PIPP, Stig of the Dump, The Worst Witch, CAST1, !Slideshow.

Time to re-subscribe?

Many of you who were due to resubscribe this time have already sent in your subscriptions ahead of time. It is great that so many of you appreciate Archive and are prepared to re-subscribe ahead of time. Thanks very much!

For quite a number, though, this will be your last issue of Archive unless you send in your renewal. If so, you should have received a renewal letter with this issue. If you are not sure, look at the label on the envelope and see if it says 3.12 on it. If so, this will be the last Archive magazine you receive unless we hear from you.

Note though that **we will not be sending any further reminders**. We work on the principal that anyone who really appreciates Archive will remember to re-subscribe. We would rather have a smaller number of subscribers who really enjoy Archive than have thousands of subscribers, some of whom feel that Archive is not good value for money.

Anyway, I do hope you stay with us into Volume 4 and that you will continue to enjoy and benefit from Archive Magazine. Thanks again for your continued support.



P.S. The reason there are so many reviews in this issue is partly because there is lots of new stuff to be reviewed – which is great – but partly because we are not getting as many technical articles sent in as before. If there really wasn't anything new to say about the Archimedes, I would stop publishing but I don't believe that for one minute. If you have something you could write about or have a view on what you would like to read about, let us know.

Government Health Warning – Reading this may seriously affect your spiritual health.

Christianity is a good religion for us Brits, isn't it? (Or does it just apply to the English? I'm not sure.) You know what I mean... "Jesus? Yes, wonderful teacher! He showed us how to be tolerant, 'Love thy neighbour', 'Do unto others etc'; he loved children, 'Let the little children come unto me', he loved animals, err, err, well he rode on a donkey, didn't he?!"

Come on! When did you last actually READ about what Jesus was like and what he actually said? Yes, of course he does teach that we should love one another but he also taught there was such a thing as truth and that truth brings division because some people accept it and others don't. He claimed to be God in human form and that made the Jews understandably furious; he taught that there was only one way to reach God and that was through him; he said he would die and come back to life again (and he did); he said that there is going to be a time when everyone will be judged by God – some will be accepted and some rejected.

Oh dear, I can see the hackles rising... but don't blame me. I agree that it may not be "nice" and "tolerant" to say some of these things but they are not my ideas, it's what Jesus said.

I just can't accept the "gentle Jesus, meek and mild" philosophy. If you think that I have finally flipped, read the gospels for yourself and come to your own conclusion about Jesus. Don't be fooled by these people (some of whom are well meaning theologians trying to make Christianity more "acceptable") who take scissors to the gospels and try to cut out or explain away the bits they think people will find unpalatable. I challenge you to face the Jesus of the New Testament for yourself; don't rely on childhood memories of the gospel or second hand bits from other books; read it for yourself and then tell me I'm wrong!

Archive

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Products Available

- **A3000 memory prices down again** – Atomwide's 1 to 4M A3000 upgrade is now down to £355. We now also have Computerware memory boards available at the same price as the Atomwide ones: £90 and £355. These are the same format with just 8 chips, as Acorn prefer, providing either 1M or 4M by using different chips. (With the 4M chips, you don't end up with 5M, unfortunately, as one of the four megabytes just duplicates the internal ram.)
- **A3000 memory prices down again (part 2)** – The Morley 1 to 2 M boards are now down to £90 and the 1 to 4M upgrade boards are on special offer, while stocks last, at £240. To upgrade from a Morley 1M board to a 3M, it is still just the difference in price: £240 – £90 = £150. Send in your old 1M board with a cheque for £150 and we will upgrade it for you.)
- **A3000 VIDC enhancers** – Atomwide have now re-designed the VIDC enhancer so that it will fit into the A3000 as well as A300/400 series machines. If you have a multi-sync monitor, it is well worth thinking of getting a VIDC enhancer at £35.
- **A310 memory upgrade price drop** – Computerware's memory upgrades have dropped in price. The 1 to 2M upgrade is now £360 and the 1 to 4M upgrade is £540. Despite what we put in last month's issue, these upgrades will continue to be available from us either as Computerware upgrades or from another company, as yet undecided. The new company will take over all the guarantee commitments of Computerware and, in any case, we at N.C.S. will give a personal guarantee to cover the full 12 months.
- **ARM3 price drop** – Aleph One have dropped the price of their 30 MHz ARM3 upgrade to £495 +VAT. We can now sell them for £520 inc VAT (compared to the Watford ARM3s at £460).
- **CASA** – Computer Aided Structural Analysis of 2D frames is available from Vision Six. The entry level version at only £150 +VAT copes with up to 32 members and 32 nodes and will run on a 1M machine. The full version is £600, needs somewhat more memory, and has a capacity only limited by the amount of memory (which could be up to 8M, don't forget, with Atomwide's 4 to 8M upgrade).
- **DataSweet** – a suite of desktop applications written especially to develop children's data handling skills. Each application may be used to explore data handling techniques from basic graph drawing to full database searches and spreadsheet calculations. The whole 'DataSweet' has been written with the National Curriculum guidelines on data handling in mind. For further information, contact Hampshire Microtechnology Centre on 0705-378266.
- **Desktop Office** – is a very impressive looking package from Minerva which combines, in the multi-tasking environment, database, word-processor, spreadsheet, graphs & charts and communications packages. This looks to be excellent value at only £129.95 inc VAT (£120) through Archive.
- **Minerva price reduction** – Not surprisingly, with the launch of Desktop Office, Minerva are reducing the prices of GammaPlot & SigmaSheet to £49.95 (£46 through Archive).
- **Memory chips for Willi Langhans' upgrade** – Those who sent an S.A.E. for the plans of Willi Langhans' D.I.Y. memory upgrade may wish to know that we can supply the memory chips at £70 per Mbyte (8 chips).
- **Monitor leads** – We now sell extra-long (1.2 m) monitor cables (£15) for use with Acorn or Philips monitors. They also have a connection for sound so that you can amplify the Archimedes' sound and have manual control over the volume.
- **Nevryon** – £19.95 from the 4th Dimension (£18 through Archive) is a fast action sideways scrolling shoot 'em up game. Two discs, 256 colour graphics, 4 channel stereo, 6 pieces of stereo music, 6 levels of "true parallax scrolling" and an "amazing array of weaponry for maximum destruction"!
- **Personal Accounts Special Edition** – Apricote Studios have done a new multi-tasking version of their Personal Accounts especially for the A3000 and Archimedes. New features include: Automatic standing orders and forecast ahead, budgeting, 10 bank/credit accounts on-line at the same time, calculator, usable for clubs or non-VAT businesses. The new price is £24.95 or £23 through Archive. If you bought the earlier version, you can upgrade for the

difference in price and your old files are completely compatible. Return your old disc to Apricote (not to Archive) with a credit card number or cheque for £10.

• **Redshift** – an impressive fast-scrolling (vertical) arcade game from Minerva (£17.95 or £17 through Archive).

• **Removable hard drives** – The Electric Scribe Co. Ltd are selling a removable hard drive for the Archimedes. It's basically the same mechanism as the Oak drive but only costs £749 +VAT though this does not include a SCSI podule. See the SCSI Column on page 12 and the advert on page 13 for more details.

• **Shareware 30** – Although we mentioned Sharewares 31 and 32 last month, we seem to have omitted to mention Shareware 30 which contains various sound-tracker modules plus a sound-tracker test program.

• **Careware 8** also got missed out of the honourable mentions. It contains a 'Primary' word processor, yet another 256 colour art package, desktop 'Life', graphics demos, mouse patience, bat'n'ball game with a difference, 'peggity' game, various Maestro files, FWPlus file conversion, auto-disc formatter, disc label designer, line editor module, movable icon bar, 01 to 071/081 conversion, RMA manager.

• **Tabs** – the 3-D model making software from TAP Consortium is now available in its full-release version. This software allows you to create models on screen and then get the computer to print out an exploded view of the model which can be used to cut out and make a 3-D model. (We have a review version and need someone working in an educational CDT environment to try it out. You would need to have access to a Plotmate A3M or HGPL compatible plotter.)

• **WorraCAD** – a mistake on the Price List last month gave the price as £70 – it should have been £80, sorry! Oak's own price is £75 +VAT = £86.25. For more details, see the advert on page 22.

• **Archive Special Offers** – We are doing some "year-end" special offers:

- **Shareware Bumper-Bundle** – (Sharewares 0 to 26, 30 to 32) £90 reduced to £70
- **Any 10 Shareware Discs** – £30 reduced to £27
- **Careware Bumper-Bundle** – (Carewares 1 to 8) £48 reduced to £44
- **Program Discs Volumes 1 to 3** – (31 discs because Vol 1.1 to 1.6 are on one disc) £93 reduced to £65
- **Program Discs Volume 3 only** – 12 discs £36 reduced to £28
- **Program Discs Volume 4 only** – (i.e. advanced booking) 12 discs £36 reduced to £33
- **Bumper Binder Bundle** – Binders 1 to 4, £20 reduced to £16. **A**

Archimedes

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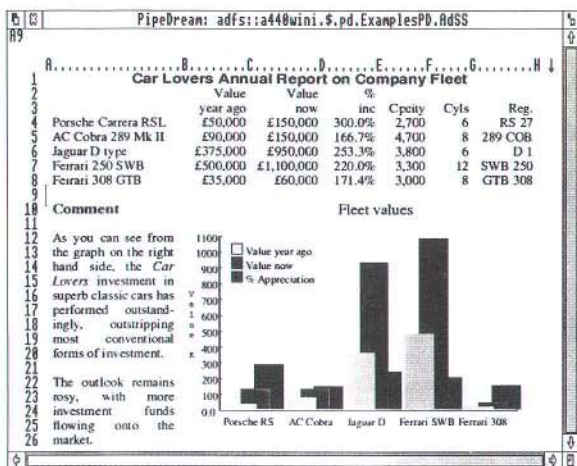
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All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingeruity's Presenter 2 and then loading the resulting graph back into PipeDream 3.

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Hints & Tips

• **Greek3 outline font problem** – I was very interested to read, in Archive 3.11, about solving the problem of the slowness of the Computer Concepts Greek3 font. The root of the problem was that the internal and external names should be the same, and the article suggests that you can simply rename the !Fonts.Greek3 directory to !Fonts.Greek, which is very quick and easy. However, if you do this then any existing !Draw files, etc containing the Greek3 font will not display correctly; the Greek characters will be replaced with ordinary system font characters. It seems desirable to retain the external name Greek3.

I think that the best course of action is to change the internal name from Greek to Greek3, using the Acorn !FontEd application. The article mentions this without saying HOW to do it; it was all GREEK to me! So after I found out the hard way, here is an idiots guide...

Install !FontEd on the iconbar, open up the !Fonts.Greek3 directory, and you will see the IntMetrics and Outlines files. Drag the Outlines file onto the !FontEd icon on the iconbar. A window will then open showing all the Greek characters. After a pause, you will hear a beep to show that the operation is complete. Now click <menu> over this window and use the Alter->Font name option to change it from Greek to Greek3. Now choose the Save->Outlines and Save->Metrics options in turn; just click on the OK boxes, as the file and path names are fine as the are. Be very careful not to change anything else!

Richard Sterry (Wakefield BBC Micro User Group)

Make sure you take a back up before you try this as your risk losing the font if you get it wrong. Don't say we didn't warn you! Ed.

• **Recovering deleted files** – If you accidentally delete a file you can still recover it so long as you take the following steps:

- (i) Do NOT write any data on the disk.
- (ii) Use the !DiscEdit program on Careware 2 and

look for your file on the disc and note the address (in hex) of the start and end of the file.

- (iii) Now you can use these addresses with the file recoverer program on Shareware disc 9 to extract the file from the disc. Dirk Schafer

• **RenderBender on SCSI** – In the hint last month, Neil Berry was obviously using an early version of Oak's SCSI interface software in which the filing system was referred to as SCSIIFS, so all references to "SCSIIFS::" should be replaced by "SCSI::".

• **SWI "OS_PrettyPrint"** works in VDU 5 mode (print text at graphics cursor) as well as VDU 4 mode (print text at text cursor). It formats the text according to the current graphics clipping window (set by VDU 24). For more details on OS_PrettyPrint see Archive 1.7 p 9.

Paul Witheridge

• **System variables for the Filer Module** (revisited) – Here is a simpler solution to the problem of not being able to use system variables with the *Filer_OpenDir and *Filer_CloseDir commands than was suggested in Archive 3.11 p 7.

```
*SetMacro Alias$Filer_OpenDir
    Set Alias$foo %Filer_OpenDir
    %0|Mfoo|MUnset Alias$foo|M
*SetMacro Alias$Filer_CloseDir
    Set Alias$foo
    %Filer_CloseDir
    %0|Mfoo|MUnset Alias$foo|M
```

Once these two lines have been typed, *Filer_OpenDir and *Filer_CloseDir can then be used with system variables.

Michael Ben-Gershon

• **Edit functions keys** – Two more undocumented function key actions for EDIT (in addition to <shift><f1> as described in Archive 3.4 p 5). These are: <Ctrl><f2> which is equivalent to clicking on the window close icon and <ctrl><f7> which toggles between the current caret position and the beginning of a marked block.

Paul Witheridge **A**

Comment Column

• **ArcLaser vs Laser Direct** – We have had both the Computer Concepts and the Calligraph Laser printers in the office and so have had a chance to compare the two products (special thanks to Andy Snow who volunteered his ArcLaser). The bottom line is that Laser Direct, at Archive prices, is just £40 more expensive than ArcLaser, so what's the difference?

The printing end of both products is exactly the same i.e. a Qume CrystalPrint LCD laser printer with its control hardware removed.

Both products provide podules which allow the Archimedes to control and send data straight to the printer at high speed. These podules are not too dissimilar, as was demonstrated by the fact that we managed to run the Calligraph printer using the Computer Concepts board and software.

Although the podules do more or less the same job, it seems to me that the Computer Concepts board has been more professionally produced whereas the Calligraph board looked as if it had been hand soldered and that they had not cleaned it properly afterwards.

As far as the user is concerned, the printers are accessed via a RISC-OS printer driver which is, at present, supplied on disc but will be included on an EPROM on the podules when the software is finalised. The Calligraph podule has no EPROM in it at all, at the moment, which means that you must alter the software so that it knows which podule slot the board has been installed onto. By contrast, the Computer Concepts board just plugs in and the software runs. Obviously this will be rectified when the Calligraph software has been put into EPROM.

Initially, we wanted to perform some speed tests comparing the two printers but we found that we couldn't because the Calligraph software was incomplete. After various updates and abortive attempts, we finally got a version of the software which was comparable with the Computer Concepts' software.

We printed several standard documents so as to get a feel for the relative speeds and at first we had a lot of trouble getting the ArcLaser to perform so we performed the following tests.

(The test conditions were: 256k font cache, *Configure FontMax 256k, *Configure FontMax3 66, no ARM3, mode12.)

	ArcLaser	Laser Direct
Small ASCII text file:	14"	8"
Draw demo file:	14"	11"
Impression demo file:	2' 42"	1' 36"
80k sprite:	38"	30"

As you can see, the Laser Direct set up is faster. However, we did have the 'FastText' and 'Compression' options switched on. The former is a replacement faster Font Manager for use with Acorn format outline fonts and the latter means that the compiled pages are compressed before being put into the printer queue. Because the Laser Direct uses a printer queue and prints as a background task, the user regains control of the computer much quicker than with the ArcLaser. Computer Concepts quote the following example: 'When printing six copies of a four page document, it is quite possible that control would be returned to the user within 50 seconds of initiating the print. While it actually takes just under 5 minutes to physically print all 24 pages.'

The quality of the printouts are comparable. Although the half toning (grey scales) on the two printers performs slightly differently, the overall effect is that neither has an advantage over the other i.e. one will print better in one situation and not as well in another. The half toning algorithms used do produce adequate images but there is room for improvement, especially when compared to the output from PostScript printers.

The Laser Direct software allows the user to print a test page and to interrogate the Qume as to the number of pages printed and the drum usage from the Archimedes. In order to do this with the ArcLaser, you must press various buttons on the Qume itself.

Because the direct lasers are accessed as RISC-OS printer drivers, programs that do not use these drivers will not be able to access the printers e.g. First Word Plus. For this reason, Calligraph are developing an Epson LQ emulation mode. However, this is not yet completed so it could not be tested. Computer Concepts are also considering something similar.

At present, neither of the printers is capable of being used as a network printer but again, both companies are looking into the possibility.

In conclusion, while neither printer's software is fully developed, I feel that Calligraph's Arc Laser has further to go before it is completely ready. As a result, the product tends to be a bit rough at the edges and users will have to wait a little while before they get a full spec product. Computer Concepts have produced a polished product which, as it stands, is a pleasure to use. If the difference was the full £115 as per the advertised prices then it might be worth going for the ArcLaser but, for Archive subscribers, the extra £40 is well worth spending. Adrian Look (*The relatively lower price of the Laser Direct is because Computer Concepts are able to give twice the discount that Calligraph can manage and this extra discount can then be passed on to you, the subscribers. Ed*)

• **Investigator** – This disk from The Serial port advertises itself as a powerful protected disc copier. I always like to backup all my discs and I enjoy investigating disc formats, so I sent them my £24.95.

The program arrived within a week. The documentation was badly photocopied, the text not even being square on the page. I broke my normal rules and started reading before I tried out the program, but it was clear that Investigator was not a RISC-OS application and that it did not obey the usual rules. I inserted the floppy and double clicked on the application.

The program, after a warning, completely clears the machine – like the PC emulator. It uses Genboot to grab all available memory and it does not allow a neat return to the RISC-OS desktop. The reason for this is that floppy disc contents have to be loaded into a memory buffer and, on a 1Mbyte machine, it is not easy to find a spare 800 kbytes lying around.

The application presents a rather garish screen but there is a useful help facility. Unfortunately, this irritated me by giving messages such as "This is a very boring area. Why don't you point at something more interesting." Gimmicks on the screen include two identical 'knobs' for contrast and brightness control.

Using a test floppy, I found that it is easy to load a disc into memory and to examine the format. About

half the screen is given over to a map of the disc showing sectors, gaps, deleted data and the like, with different colours. The program seemed to make a good job of copying protected and unprotected discs, at first. A sector editor shows only a small part of a sector in a little window and does not allow easy movement between sectors and tracks. Whole discs may be saved as single ADFS files and re-created from those files.

Then I gave it the ultimate challenge – copy thyself. The copy was not fully functional and did not itself make good copies. The program did not find anything unusual about its own disc but since the copy failed to work, there must have been something... The application did not work if moved onto a hard disc.

So, would I recommend this program? Well, no, not entirely. My benchmark program for disc-tweakers is ADI on the BBC micro. The authors of Investigator would do well to look at the ADI user interface and consider a new front-end for their product. Sean Kelly

Sean doesn't seem too keen on Investigator!?! Has anyone else used it? What do you think? Ed

• **New Acorn machines?** – With the advent of the new R200 series from Acorn, the R225 and R260 Unix workstations, a question arises – will non-Unix versions of these machines be forthcoming? These machines are just what people have been waiting for: a machine based on the ARM3 with more than 4MB of RAM (expandable to 16MB), with Acorn's rumoured new FP chip to be included in future machines and offered to early buyers of the R200 series as an upgrade. The logical thing to do would be to launch a new range of Archimedes' for the home based on the R225 base model without the Ethernet adapter but with a hard disc installed. Such a machine would surely take the place of the present A440 or A420 machines.

These new machines are excellent but what do they do for existing Archimedes users? Owners of the A300 series machines already realise, to their cost, just how much (or how little) Acorn care for their existing customers. I upgraded from an old Beeb model B to an A420. I waited for the new A400 machines because I hoped that they might be an open architecture that could be easily upgraded at a later date when the ARM3, FP accelerator and more

memory became available. (Oh how wrong I seem to have been!)

In the three years since the launch of the Archimedes, Acorn have not provided any major upgrade for existing machines. Instead, companies such as Aleph One and Watford Electronics have been left to do it, with Acorn sitting on the sidelines taking more than a year to produce anything using the ARM3. Acorn do not seem to have any real interest in their existing customer base or, if they do, they have a funny way of showing it.

The design of the R200's gives the impression of an existing Archimedes mother board with a SCSI expansion instead of ST506 hard disc controller and a plug-in daughter board for the CPU instead of merely a chip socket. The extra memory comes in modules of 4Mbyte, each module slotting into a socket adjacent to the processor board socket. This brings up an interesting question; Is it possible to design a processor daughter board containing an ARM3, a FP socket compatible with the new Acorn chip and sockets for more memory and then to plug it into the ARM2 socket on existing machines? Aleph One and Watford have ARM3 accelerators, so why not go a little further?

Acorn could provide its existing customers with an upgrade, perhaps a 2nd processor for the Archimedes much like the excellent 2nd processors for the old 8-bit BBC micros. Such an upgrade could be supplied as a 'podule' with an ARM3 and more memory, allowing newer processors to be used, like the daughter board arrangement in the A200 series, and allowing the same memory modules as used in the A200's to be used. An upgrade of this type would ensure the future of the A300's and A400's and certainly reaffirm Acorn's commitment to customer care and support.

On the other hand, the new R200 series could be an indication of the future direction of Acorn, ignoring home users, small business users and schools, and diving into the crowded waters of Unix workstations for the business community.

Acorn have to ask themselves a simple question: What happens if the Unix market doesn't take off and the home/small business user has been alienated and driven to other manufacturers? Even if the Unix strategy works, what of RISC-OS and what of cus-

tomers loyalty? Acorn have had problems but many users, myself included, have stuck with them because they produce quality products and exiting products. Perhaps Acorn should return some of this loyalty.

Finally, and it's a bit of a departure from the rest of this diatribe, the games market of the Archimedes seems to be taking off at last, though there have been a number of false starts. Does anyone know what ever happened to Domark's "Hard Drivin'", Periscope Software's "Karma" or any of the other block busters? When are (Supposedly) Superior Software going to get off their richly finished laurels and produce some new software, specifically for the Archimedes? There was a rumour that the authors of Elite were working on a sequel on the Archimedes. Is there any truth in this? Gordon Turner, Port Glasgow **A**

I don't know about Hard Drivin' but Karma is still being worked on and they are talking about a Christmas launch. Ed

Small Ads

- **A310 + RISC-OS**, educational and games software, £450. Phone Oxford 66975.
- **A310M + RISC-OS** with 2M upgrade, twin discs, backplane, CC ROM podule, SpellMaster, colour monitor. Cost £1885, sell for £800. Leslie Scull on 027-583-2979
- **A440** including lots of software. Phone Onkar on 081-534-1198 (evenings).
- **Acorn DTP** £70. Colin Thompson on 069-76530.
- **Autosketch V2.0** £45. Phone Chesterfield 270730 after 6 p.m.
- **Philips colour monitor** £175, Home Accounts £20, Acorn 2-slot backplane £20, Citizen 120D with 3 ribbon: £100. Phone Peter on 0902-342214 after 7 p.m.
- **Pipedream 3** and U.I.M. exchanged for C or Pro-Artisan. Tord Eriksson, Ovalidsg 25:5, S42247 Hisings Backa, Sweden. Phone +31-581676.
- **Software:** Pacmania £3, Jinxter £6, Thundermonk £5, Repton £4, Apocalypse £20. Please send cheques to M Drayton, 38 Baunton, Cirencester, GL7 7BB. **A**

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Matters Arising

• **Charity donations** – for the record, here is a list of the charities to which we have given donations during the last year:

- Cheshire Homes – £1500
- Children in Need – £5000
- Dystrophic Epidermolysis Bullosa Research Association – £500
- Norwich Toy Library – £5030
- Norwich Y.M.C.A. – £500
- Spastics Society – £100
- TEAR Fund – £6000
- Telethon – £695
- Radio Invalid & Blind Club – £100

This makes a total of £19,425 and we still have a couple of thousand or so to be allocated. A very big “Thank you” to everyone who has made this possible.

• **Relational Databases** – Silicon Vision write... “Further to an article in “Matters Arising” in Archive

3.11 page 10 on the subject of a ‘DataVision’ customer requesting a refund:

On a positive note, we had in fact offered a refund based on goodwill but the customer had failed to send the invoice receipt which is required for our accounts procedure. However, we firmly stand by our initial and constantly maintained position that “DataVision performs as advertised”. It is also the only database that offers both relational updating and reporting facilities for the Archimedes.

Readers may like to wonder about who gains most from this type of negative publicity !!”

Dr Yunas Nadiadi, Silicon Vision

*We asked Dr Nadiadi a while ago for a review copy and are still waiting in hope but in the meantime if anyone can make any comments on DataVision, based on experience, please let us know. Ed. **A***

Help!!!

• **!Worktools #1** from Jim Markland (Archive 3.9 p 3). Jim would like anyone who has used this package for transferring files in DXF format to feed back their experiences. Are there any packages it does not work with? Comments, positive and negative, to Jim Markland, 4 Shalford Close, Cirencester, GL7 1WG.

• **Baud Rate Amateurs** – Has anyone managed to get the Archimedes’ serial port to communicate at 45.45 and 100 baud? These baud rates are needed to write a ‘Radio Teletype’ program for amateur radio. Any ideas? Contact Peter Briggs, 35 Pinehurst Cottages, Pinehurst Avenue, Farnborough, Hants, GU14 7LJ.

• **HP DeskJet** – Does anyone have experience of re-filling HP DeskJet print cartridges, either DIY or with EQ Consultants’ re-inking kit? Comments please to Stuart Bell, 56 Crescent Drive North, Brighton, BN2 6SN.

• **HP PaintJet** – Is there anyone with an HP PaintJet who would be prepared to do a printout of a sprite provided on disc so I can see how good the reproduction is? Ian Entwistle, 44 Woodside Gardens, Sittingbourne, ME10 1SG.

• **HP printer problems** – Does anyone know how to get an HP LaserJet to print the pound sign properly when using the RISC-OS printer drivers? Also, has anyone had ‘input window out of focus’ errors with Artisan when trying to print? Contact Graham Jones, 21 Fleet Road, Fleet, Hampshire.

• **Need a wash** – A ‘wash’ function (similar to the one in Clares’ ProArtisan) is needed for a graphics package. Contact Mr D Rose, 25 Blackheath Vale, London, SE3 0TX.

• **U.I.M. in distress** – I am trying to complete the final mission in U.I.M. I have acquired all the necessary equipment (central computer, mission module, navigation modules, etc) and I know the name of the destination port I have to reach. However, I have unsuccessfully tried to reach the port either by choosing my own route or by using the navigation module. A little way into the journey the navigation module gets confused and keeps sending me backwards and forwards between the same two ports. I have tried to get around this by targetting different ports and by starting from other ports, but to no avail. Has anyone else had this problem? Contact Peter Baxter on 0524-701543.

• **Wipe On/Wipe Off disc labels** – Does anyone know where to obtain wipe on/wipe off disc labels. In particular the 'PollyLabels' produced by BlackStuff Ltd. Sandie the Walrus used to supply

them on his PD discs but he has lost the address. Contact Simon Burrows at Woodleigh Lodge, 32 Stoughton Lane, Stoughton, Leicestershire, LE2 2FH. **A**

SCSI Column

Paul Beverley

• **Cumana removable disc update** (Brian Cowan writes) – In my review of the Cumana removable disc cartridge drive unit last month, I mentioned that there were some problems with the software in the Lingenuity SCSI interface. The good news is that the boffins at Lingenuity are looking into this and a solution should be appearing soon.

One thing I want to do is to put a 20 megabyte DOS partition on one of these discs. It will be interesting to see how well DOS applications run from the disc. If they run without further speed degradation then it will free up valuable Winchester space. I have discovered that !PCDir can be configured to look at a SCSI DOS partition. Also MultiFS will do this (see the review on page 35).

When I looked at the construction of the Cumana unit, I was rather worried that the fan in the case would draw dust over the disc surface. I have subsequently discovered that a disc which was left in a running drive for about a week accumulated a considerable amount of dust. When one considers that the inserted disc has its protective cover opened, I think that this is a cause for concern. Also, one of my three discs has become corrupted, ruining one file. It would not verify and I had to reformat it. Although worrying, this is not a statistically significant test. I will be more careful with my discs in the future. Brian Cowan

• **Mac removable hard drives** – Mike Hobart told us that he had tried a 45M removable hard disc, originally intended for use with an Apple Macintosh, on an Archimedes with an Oak SCSI card. The combination works well and brings down the price quite markedly. We have found a supply of these Mac drives which we could sell for £710. So, if you add an Oak SCSI card at £220 and a cable at £10 you get £940 which represents a significant saving compared with the Oak 45M removable drive (£1190 at Archive prices). The speed of these Mac drives is roughly the same as the Oak ones – 590 kbytes/sec, access time 25 msec, compared with Oak's 650

kbytes/sec, 30 msec. Give us a ring at the office if you are interested because if we can buy these drives five at a time we can get an improved price.

One interesting point to note is that in mode 21, the standard Oak 45M drive drops from 650 to 55 kbytes/sec whereas the Mac drives manage to keep up to 360 kbytes/sec. This probably means that they have more buffering on the drive which allows the computer to take the data when it is not busy updating the screen.

• **More removable drives** – The Electric Scribe Co. Ltd have just produced a new drive system for the Archimedes. For £749 + VAT (£861) you can get a 45M removable SCSI drive with the same fast transfer speed (650 kbyte/sec). These are basically the same drives (SyQuest 555) as used by Oak and for the Mac drives. Alan Barclay of ESC Ltd reckons that theirs will work slightly faster though because of a small proprietary difference which they have implemented. Note though that their price does not include a podule (£220 through Archive) so the complete price would be £1081 compared with Oak's £1190 (through Archive) and the Mac drive, also through Archive, at £940.

• **Non-SCSI hard drives** – Ian Copestake's new hard drives for the Archimedes are IDE interface, 20M drives which, while not being SCSI, are an interesting new departure for the Archimedes. They are 2.5" drives and are therefore small enough to be INTERNAL on an A3000! (but I hope they have thought carefully about power consumption from the internal p.s.u. and about heat dissipation within the case without a fan!) Also, the podule is very small and can be fitted into an A310 that has not got a backplane since it can stand vertically in the connector into which the backplane would normally be plugged.

Ian hopes to have them on show at the Acorn User Show but, as usual, the development of the software is taking longer than anticipated. For more details, see the advert on page 14 which, as I write, I have not yet seen.

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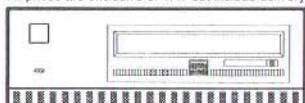
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Outline Fonts – Theory & Practice

Gerald Fitton

What are outline fonts?

If you send a plain text file to a daisy wheel or dot matrix printer from !Edit or by using PipeDream's printer drivers, the printer will use its own internal fonts to print your file. If you want to print text at any other size, with any other font or if you want to include drawings, you must print the file using the graphics mode of the printer. When the Archimedes was single tasking and ran under the 'Arthur' operating system, Acorn provided a set of 'Bit-mapped and Anti-aliased' fonts. The results of using even the best screen dump programs were never satisfactory and the only way of getting a good quality print was by using a PostScript printer. Many people still have only these anti-aliased fonts.

The new Font Manager

About two years ago Acorn introduced outline fonts. To use them, besides buying some (new) outline fonts, you must install the new font manager (version 2.42) and RISC-OS printer drivers (version 1.12). Both font manager and RISC-OS drivers are included with Acorn's DTP, Impression and Ovation. The font manager is also provided as part of an Acorn Font Starter Pack or from the Electronic Font Foundry if you ask for it when buying a font pack. Another way of getting the new font manager (and Beebug's SwissB font, the !PrinterPS and !PrinterDM printer drivers but not !PrinterLJ) is to pay £5.00 for the Ovation demonstration disc (or free if you ask Clares for a Tempest demo disc). All the RISC-OS drivers are on Acorn's RISC-OS 2.00 Extras Disc (Shareware 17) and come with 4mation's Poster. Colton include neither font manager nor printer drivers with PipeDream.

With the new outline font manager, text on the screen is still bit-mapped but printing is done very differently. When printing, the font manager makes a high resolution line drawing (in memory not on the screen) of the outline of every character using the smooth curves of !Draw: these outlines are filled. Using the new printer drivers, the printer then produces a dot pattern at the best resolution it can manage so that the final resolution of the printed character

depends only on the printer. Nine pin printers such as the FX80 have a pin diameter of about 1/80" so, even if the resolution is over 200 dots per inch, thin lines are at least that thick and tend to look 'blotchy'. Laser printers (using !PrinterLJ) have a resolution of 300 dpi and a dot size to match. A good compromise is a 24 pin or ink jet printer. The Canon BJ-130 has 48 jets which give a resolution of 360 dpi: it is an economically priced ink jet printer and a RISC-OS driver is available from the Electronic Font Foundry (EFF).

Types of fonts

Fonts may have a fixed spacing (like the typewriter font *Courier*) or be proportionally spaced. They may be plain (sans serif) or have rectangular (slab) or curly finishing strokes on the letters (serifed), they may look like joined up writing (script) or be suitable mainly for posters (decorative). Fonts can be upright (roman) or slanted (oblique) – sometimes the slanted versions are more curved or serifed than the upright equivalent (italic). Finally, they may be thin or thick: on a scale of 1 to 9 the two most popular are medium (4) and bold (6). The full range is extra light, light, book, medium, demi bold, bold, extra bold, ultra bold and black. With all these parameters, no wonder people feel overwhelmed by the choice.

Fonts have been around since Caxton's time but some fonts have become popular simply because they are good. Until recently, printing fonts from a desk top computer meant using Adobe's PostScript language with a PostScript printer. Many of the fonts used for DTP look like Adobe's fonts but they have been given a different name. If every character is the same width as the Adobe equivalent then the font is said to have the same metric and to be PostScript compatible with the Adobe font. Adobe registered the word PostScript as a trademark and licence other people to use their metrics: these Adobe fonts are now regarded as a standard. Ventura Publisher is a popular DTP for PC's and they have allocated a number (which is used by Acorn's DTP – have a look at the dtp_config file) to match Adobe's PostScript names. Generally, if two fonts are compatible with the same PostScript font, then they have the same metric and are completely

interchangeable. For example, if you have only Beebug's SwissB you can exchange files with someone who has only Acorn's Homerton because they are both *Helvetica* (Ventura number 2) equivalents. In the paragraphs which follow, the Adobe name is in italics.

What is a good range of fonts?

As with screwdrivers, once you appreciate how to select exactly the right tool for the job, you can never have too many! However, as a minimum, you need a serifed and a sans serifed font both in roman and slanted (either oblique or italic) and each in medium and bold weights (that makes eight fonts in all). Acorn DTP and Impression include the serifed Trinity, Times, and the sans serifed Homerton, *Helvetica*, whereas Ovation includes the serifed Paladin, *Palatino*, and two sans serifed fonts SwissB, *Helvetica* and Vogue, *Avant Garde*.

Where to get more fonts

Acorn and Beebug have said that they will be bringing out more fonts (about half a dozen or so different typefaces) but, apart from the fonts provided by DTP software houses (what's happened to Tempest?), the only independent company which I can find who produce the full Latin 1 set (letters such as á ç î è and ö are essential to overseas users) and design to the full Acorn specification of 'Hinting' and 'Scaffolding' (more of this later) is the Electronic Font Foundry. If you count the name of the typeface once only so that all ten of EFF's French, *Lubalin Graph* light, book, medium, demi bold and bold in both upright and oblique—count as only one typeface, then EFF offer a range of over 30 'non-decorative' typefaces, most of which are PostScript compatible. In addition to these they have a range of about 10 decorative fonts, a MathGreek font and a set of symbols called Dingbats, *Zapf Dingbats*.

What to get

Once you have the minimum set of eight fonts what else should you buy? Well, it depends on your interests; if you are producing mainly textual articles then you will probably want some of the better known, well established, serifed and sans serifed fonts but if you are producing posters, letter headings or advertisements then you will need a good set of decorative fonts. Mathematics text needs Greek characters.

When deciding which typeface to use, think about who is going to read it. For example, *Helvetica*, being sans serif, has a clean look and is particularly good for tabular data and for children – have a look at a dictionary or telephone directory – whereas most magazines, where text is left and right justified, use a serifed font such as Times. A fairly conventional combination is a bold sans serifed typeface such as *Helvetica* for subheadings and Times for justified body text – which is the environment in which you are now reading. The reverse, sans serif for the body text, can be useful if you want the reader to accept your words as factual or authoritative such as in a company report. Have a look at newspapers, magazines, books, advertisements, letterheads, business cards, company reports and try to analyse how the different typefaces affect the way you perceive the document.

Mix & Match

If you have only Ovation's basic set then you should get the serifed EFF Times, *Times*. If you have Impression or Acorn's DTP then a good alternative to Homerton, *Helvetica*, which many people find more readable at small point sizes and for company reports is EFF AG, *Avant Garde*. Large headlines look stark, even sensational, unless serifed; headlines in the Daily Mirror and Star are usually sans serif. A typeface which has somewhat more elaborate serifs than Times is NewSchbook, *New Century Schoolbook*. It is suitable for large headlines and is used in some text books as body text; Acorn have an equivalent called NewHall (on their "Font Pack NewHall").

Non-decorative fonts

Once you have a set of fonts such as those above, you might look at Oxford, *Optima*, which, although sans serif, has a slightly curved outline that gives a touch of elegance. You will find many advertisements and letter headings use either *Optima* or, increasingly, Sulików, *Bauhaus*, which even to the untrained eye has an upmarket style. English, *Univers* is popular as an alternative to *Avant Garde* for a sans serif body text. French, *Lubalin Graph* has slab serifs which makes good paragraph headings and helps readability at small point sizes. Some people prefer London, *Garamond*, a serifed font, to Times particularly for stylish subheadings.

Small point sizes

Consider an m or an H. As the character size is reduced, the size of the printed dot (say a 300th of an inch) becomes a significant proportion of the thickness of the legs. The character will look wrong if the legs are of different thicknesses; Acorn's font manager makes use of local links between the legs to keep them the same thickness. Similarly, a word will look uneven if adjacent letters (e.g. a double tt) are not matched in the same way by global links from letter to letter. Very thin letters in light or book must have at least one dot everywhere or parts of letters will be lost.

Acorn's method is to introduce skeleton lines within each letter which, however thin, are always printed. Acorn have designed their new font manager to look for and make use of these skeleton lines and the local and global links. All the fonts I have named up to now have been designed with skeleton lines and with local and global links so they do print well even at sizes as low as 8 point. In spite of all that can be done by linking adjacent letters this way, choice of typeface is a more important factor.

Some typefaces like French, *Lubalin Graph*, with slab serifs, look better and are easier to read at say 6 point than ones with more ornate serifs such as *Times*. In part the reason for this is symmetry but also the body part (e.g. the curved part of a b) is a greater proportion of the point size. This makes some fonts appear larger than others at the same point size. Look at figure 1 and compare *Optima*, *Lubalin Graph*, *Helvetica* and *Brush Script* all at the same point size (approximately 8.5 point).

I have looked carefully at the Acorn and EFF fonts and both are quite good. I have noticed a global linking fault which appears at 11 point with Acorn Trinity but I have yet to find anything badly wrong with EFF's fonts. I have spoken to Dr Edward Detyna of EFF and, if you find anything wrong let him know, he will put it right and you'll get a free upgrade. Who do I get in touch with at Acorn?

Figure 1 shows some text and mathematical symbols. The text contains SwissB, *Helvetica*, from the Ovation demonstration disc mixed with Homerton, *Helvetica* from Acorn. I bet you can't tell which is which. The remainder, Oxford, *Optima*, French,

OUTLINE FONTS

Typefaces

In the compliments slip, the heading, **POINTER** is in EFF's Oxford, Adobe's Optima. The phrase, With Compliments is in EFF's *Tamain* which has the PostScript equivalent *Brush Script*. The remainder of the text is deliberately a mixture of Ovation's SwissB and Acorn's Homerton. Can you tell the difference?



An Alternative

The paragraph on the left uses **Oxford Bold Oblique** for the heading, an unusual choice, and French, *Lubalin Graph* for the body text. This paragraph uses Oxford for the body text and the column seems narrower.

Formula can be written in **MathGreek** font

$$\exists: \nabla^2 \Psi(\Phi_0) = \iint (\partial_x \mp \partial_y) \partial \alpha \partial \gamma \int \sqrt{(\xi + i\eta)^3} d\xi = 2\pi\lambda$$

Using a DTP

Lubalin Graph, Tamsin, *Brush Script* and others, including the MathGreek symbols, are from EFF. I must add that using more than three typefaces in a document tends to look ‘fussy’. You need a very good reason to exceed three typefaces – my justification is that I wanted to show you a wide range of different typefaces – as a rule don’t do it!

Fonts for special sizes

Times really is used by the Times newspaper for their headlines but a slightly different version of this typeface, called *Times Ten* is used for their body text. The *Ten* indicates that the font is specially designed to look good at ten point. Now I'm not suggesting that you get a different version of *Times* for every point size you are thinking of using but, if you do print a lot of *Times* text at ten point, you should consider changing from *Times* to *Times Ten*.

Large point sizes

Whilst hinting and scaffolding links are important at small point sizes, at large point sizes, the smooth and balanced curvature of the characters is more important. Thus, well balanced curvatures are important for the decorative fonts used in posters, letterheads,

business cards and the title pages of reports. A word like 'hung' must have the curvatures of the h, u and n matched and balanced and the curvatures of the different parts of the g must balance. At large point sizes any imbalance is noticeable and makes the letters look ugly or kinky!

Acorn's upright fonts are better than their italic and oblique fonts. EFF have been more adventurous and have some excellent decorative fonts. They have designed their fonts on a larger grid than Acorn so that the smoothness and balance of the characters is maintained even for those parts where the radius of curvature is small and changing rapidly. Have a look at figure 2 below.

A poster should be designed with a font that attracts and heightens the experience of the reader. For example, an invitation to a Halloween party might use a headline in Horror, or a cocktail party might use the Soho font. Figure 2 is a poster made using ten different EFF decorative fonts (and Dingbats) and so the overall effect is rather overpowering and one font detracts from another. I have tried to group them as Mike & Hot Dog; Horror, Sword & Ice Pick;



Fancy Dress and Xmas to lessen this effect but without too much success. (Poster from 4mation comes with a range of decorative fonts very similar to those from EFF.)

!Draw disc files

How can you find out what a font will look like on your printer? Text entered into a !Draw file through the style menu will appear in a font *only* if you have that font present. However, by importing characters into a !Draw file using !FontFX, the outlines are held in !Draw file format and, whilst you lose the scaffolding links, you do retain all the balance of the outline. I do have quite a range of fonts (but by no means everything available) and so, if you send me a blank formatted disc, a sticky label and a stamp, I will send you a !Draw file containing a few letters

(the name of the font) from each font I have. You will be able to scale these few characters to a larger or smaller size. If you have one of the version 1.12 printer drivers (RISC OS 2.00 Extras Disc) then you will be able to print the !Draw file on your printer and see how it looks. When you have done that you will be better able to make a decision about buying a particular font.

!FontFX & !FontEd compatibility

Finally, although you can use !FontFX with all the fonts named above to turn them into !Draw files you cannot use Acorn's !FontEd to take apart and rebuild EFF's fonts. The other fonts named in this article can be studied with !FontEd but you have to have a lot of expertise as well as patience if you want to make a new font this way! **A**

Superior Golf

Simon Burrows

For a long time, the only choice of golf game has been Holed Out, which received generally good reviews. Now, however, Superior Software have launched their own 'Superior Golf' in direct competition to it. Unlike Holed Out, a full hole/course designer is included (the Holed Out Designer costs an extra £19.95!) and it comes complete with six ready-to-play courses (54 holes in all) all for £19.95 or £18 through Archive.

On loading the main program, a menu gives you the choice of playing golf, practising on the driving range and practice green or designing new holes and editing courses.

Playing the game

When playing the main game, a choice of courses is given, as well as the number of players, number of rounds and player ability levels (either Novice, Club Player or Professional). The main screen shows a 3D view towards the hole from just behind the player. Hazards of the holes include the light and heavy rough, bunkers, trees, water, the slope of the green and the strength of the wind. The mouse pointer is used to move a black cross to select the direction of the shot. A control panel in the bottom left of the screen indicates the wind strength and direction and steepness of slope when on the green. The distance to the hole and the type of club are shown, which is

important since a choice of ten different clubs is given with their ranges quoted on screen.

The graphics in the main window are of high quality, taking a second or two to draw. An overhead map of each hole is available and distances can be measured. To play the shot, having selected the direction, the driving is done using a power meter. You then have to use the 'snap meter' to control the amount of hook and slice on the shot, which can be difficult to get right. A 'punch' toggle allows you to prevent the ball from going high into the air. The ball takes off, hopefully flies through the air and lands, after which the screen is updated. Once you get onto the green putting is done with a detailed 3D screen, whereas in Holed Out you just get a bird's eye view. Alternatively, you can play the shot just by watching the player's actions and swing.

The physical features of the course are realistic as are the sound effects, particularly if the ball lands in water ("plop"!). Hitting from a bunker can be very tricky – more difficult for me than in reality. You can save your game in between holes.

Overall, it plays an addictive and very competent game of golf, using the proper scoring system and using stroke and/or match-play rules. Printouts of scores can be made. Although it takes a short while to get used to the method of controlling shots, once you have mastered it, it makes quite a skilled game.

DIY courses

The easy-to-use course designer allows you to construct courses from pre-defined holes, which you can design yourself using the excellent hole designer. From an aerial view, you can place and shape the bunkers, water, light rough, fairways and green as you please. The basic holes that you design are saved and can be test-played as you go along. When playing, holes are padded out with background scenes (such as skyscrapers) and it is easy (and

addictive) to create your own professional-looking holes and courses.

Conclusion

Overall, I would say that the author John Bell has designed a golf game that is more than worthy of the name "Superior Golf". If you haven't already got Holed Out and are even slightly attracted to golf (not necessarily having played it for real) and like playing computer simulations of real sports then Superior Golf is very good value at £18 through Archive. **A**

Alien Invasion

James Huntington

Alien invasion, £14.95, from Alien Images (Dabs Press' games division) is a "shoot-em-up" invaders game. It boasts over 1000 levels (mostly computer generated), 256 colours, digitised sound, various backdrop, graphics and wave editors, and bonus items which fall out of the sky! The game is supplied in a CD style case with a single disc and a 16 page instruction manual detailing use of the editors.

The game is started by double clicking on the !Invasion icon from within the desktop. After a small piece of sampled speech, the main menu is presented. From here, the editors can be used, different back-drops set up or the game loaded.

The idea of the game is to shoot up as much as you can. Items which fall from the sky can be collected to give bonus lives, extra shields and heat-seeking rockets amongst other things.

The keyboard is used to move the ship, fire and use the shield while the mouse is used only for selecting from menus and for operating the editors.

The graphics are simple and plain, composed only of a few frames. The supplied backdrops are not stunning either but are adequate and users can add their own. Digitised sound is used throughout, but the quality of the sampling is poor, probably to save memory. Each wave of aliens lines up across the screen in a varying number of rows, firing either with heat seeking, diagonal or vertical falling bombs. A password is given after the completion of each wave so that the preceding waves can be skipped.

Also on the disk are graphics and wave editors and a program for controlling and using your own backdrop. The editors are both written in BASIC and are painfully slow at times. Even so, the editors

have many features allowing easy editing and creation of either graphics or waves. The backdrop setup program allows Artisan files (Sprite files) to be converted for use in the game.

At first I found Alien Invasion slow, but then I discovered that the speed could be increased – at the fastest speed, it is almost unplayable! However, whether slowly or quickly, the aliens just wait in their rows, descending in classical invaders style, rather than swooping and circling. Also, the game uses mode 9 (320 x 256, 16 colours), not a 256-colour mode as advertised. Maybe the game would have been slightly more appealing had it used 256-colours for the backdrops and aliens. The editors do not deal well with errors either, usually crashing and returning to the desktop, destroying unsaved work.

I do not think the customisable features of the game will appeal to many and, in any case, they take too long to design and setup. The game does not really show off the graphics and sound capability of the Archimedes.

If you are looking for a good invaders game, I think the public domain YAIG game (on Shareware 16) is much more exciting – like Zalaga but runs at a great speed.

Sound	5/10
Graphics	5/10
Playability	6/10
Value for money	8/10
Overall	6/10

(Ed's comment: I think comparison with YAIG is perhaps a little unfair. Although the action part of the game is technically superior, the game is much simpler in concept and doesn't, in my view, hold your interest as long as Alien Invasion with its heat-seeking missiles, editors etc.) **A**

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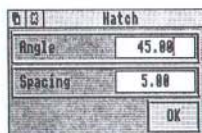
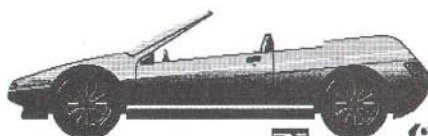
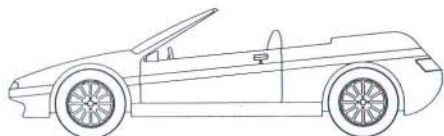
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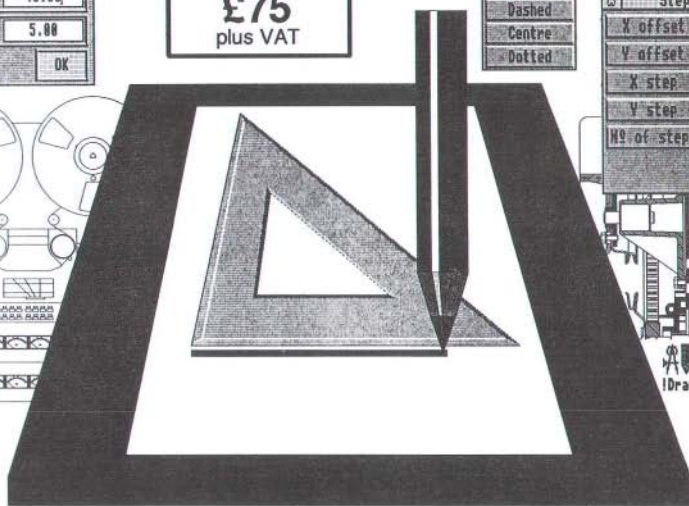
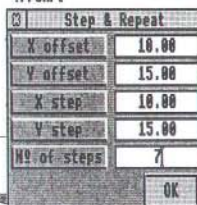
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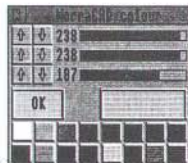
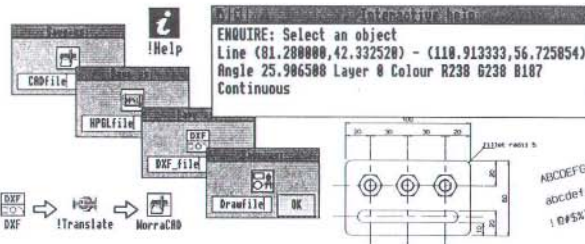
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DTP Column

Ian Lynch

As promised, I have had a more thorough look at Ovation, Beebug's new desktop publisher. We also have some comments about Ovation from Simon Burrows. This follows the main part of this article.

Introduction

Ovation is a full feature desktop publisher with the speed and facilities to be used as a wordprocessor. It would be impossible in a single review to cover all features but hopefully this article will provide a good idea of what this software has to offer. If any Ovation or Tempest users out there have time, I would be pleased to have any comments about them as I am unlikely to become expert in all DTP's in a short space of time and I want to be fair to them all. I will do a comparative review of Acorn DTP, Impression, Ovation and Tempest when all have had time to settle into their final definitive versions. More about this later.

Overview

Ovation is professionally packaged in an A5 ring binder which contains four discs, clip art, extras, work disc and program disc. The program application can only be copied to other discs and drives by using an install application which renders previous copies inoperable. This should not provide problems for single users but may be a problem in a school, for example, where the program is more likely to be deleted accidentally. The program disc also contains printer drivers and a system folder.

The clip art disc has 17 documents each containing several draw files with subjects such as flags, flashes, arrows and office. The extras disc has a character selector application for choosing the extended character set characters, a set of programming tools and additional screen modes, 13 borders and the RISC-OS printer drivers.

The work disc has Beebug's outline fonts, Paladin, SwissB, SymbolB and Vogue. Three directories, documents, pictures and stories provide examples of these resource types.

I am perhaps not the best judge of manuals since I am one of the many people who are too impatient to read them, except when writing reviews! The Ovation manual is just under 200 pages long and is well laid

out with clear illustrations, comprehensive contents list but unfortunately no index. I found it a model of clarity with the glossary of terms at the end which would be most useful for those new to DTP. Altogether, the support resources can only be described as comprehensive and comparable to those currently supplied with ADTP and Impression.

Ovation installs itself on the iconbar in the usual RISC-OS fashion and then, when <menu> is pressed with the pointer on the Ovation icon you get options for info, starting a new document and quitting. Clicking <select> on the icon opens a window on a new document which has dimensions set as from the dialogue box associated with new document (or an A4 default). Windows can be altered, dragged and re-sized, but can only be moved off screen to the right and down and not to the left. Windows re-draw quickly with automatic scrolling (a very annoying omission in ADTP) and the application is quick and responsive in use.

Objects

Ovation uses objects called text frames, picture frames and lines to build up the document. Frames are similar to those used in ADTP and Impression. Ovation uses the adjust button to move frames about the page and edge rulers are used for positioning frames. The tools to manipulate objects are on the left of the lower scroll bar and are as follows: a cursor icon to select cursor editing, a tool for creating text frames, a tool for creating picture frames, a tool for drawing lines and a tool for linking frames. Text frames contain text and can be linked using the linking tool in order to flow text between frames, the direction of flow being shown by arrows. The usual frame operations such as borders, transparency and repel text are implemented. Text will only flow around the left or right of a frame created within a body of text and not both left and right of it.

Picture frames are used to display and manipulate Draw files and Paint files with facilities for cropping, scaling and applying borders. Line objects allow the user to draw a variety of straight lines in a variety of styles anywhere in the document and will probably be of greatest use in simple table construction, label lines and arrows. It is not a substitute for !Draw but adds a facility which is more flexible than the draw

tool in ADTP and lacking altogether in Impression. Frames drawn within another frame become nested with it so that moving and copying is applied to the whole structure rather than just a single frame. This is not the same as embedded frames in Impression which move a graphic appropriately when text associated with it is reformatted.

Styles

Ovation uses paragraph styles to alter the appearance of blocks of text between carriage returns. Styles can be altered fairly comprehensively through a series of RISC-OS menus and dialogue boxes. I didn't seem to be able to get the dialogue boxes to stay in view while I edited text and the dialogue boxes cannot be slid out of the way off screen, a facility I find I use a lot in Impression. Although not difficult to use if you know what to look for, I found the access to features through several multi-choice menu layers and dialogue boxes less well thought out than the Impression system which puts most options on a scrolling dialogue box and routes them through few menu options but this could be personal preference. Ovation also provides local text styles (or more accurately effects as they are not redefineable) which allow the style of individual words to be changed quickly without having to define a paragraph style. Master pages allow the pages in a chapter to be defined to give the chapter a consistent appearance throughout. Style sheets allow the user to save details of paragraph styles and master pages for use in other documents.

Features

It is worth mentioning some of the features which make Ovation unique. The clipboard allows viewing of whatever has been cut to it, whether text or graphics. This is probably not essential but quite a nice touch. The ability to draw lines drawing anywhere has been mentioned but I know some argue that since RISC-OS is multi-tasking it is better to use !Draw and keep the program as compact as possible. However, the ability to annotate diagrams quickly and easily, for example, is an advantage. The ability to nest frames is helpful in relating different objects when moving these around the document and I think this will become an essential feature of all Archimedes DTP programs as they evolve. An auto-save option provides automatic timed backup which is a feature found on the larger PC products such as Wordperfect. This is a something which should be

relatively easily implemented in any other programs and is particularly useful when the program is not fully debugged. Ovation did crash on me a few times, but an autosave interval of 1 minute meant no significant losses. Floppy users with large documents containing graphics may find such a short interval inconvenient but, with a hard disc, the delay caused by saving is hardly noticeable.

Limitations

Ovation is currently taking up 416k in my R140 and this version does not have spell-check or hyphenation features. These need at least 2M and I am not currently in a position to comment on how well they work. There is no virtual memory operation as with Impression (see Stuart Bell's comments last month in the First Word Plus column) and large documents on 1M (or even 2M) machines could become a problem. Unlike Impression, there is no facility for embedding frames which, in large documents, will cause problems with editing, moving the relative positions of text and graphics. Master pages do not seem to allow retrospective changes which means that if you forget to put the logo in the corner you can't go back and do it after you have started a new chapter based on this page. 500 pt is a font size limit and I have needed larger than this for printing posters in the past.

Conclusion

Ovation is still not finished, in the same sense that Impression has not been completed. There are still some bugs and still some features to come. This is why I am a little reluctant at this stage to do too many direct comparisons. The features which are to be put into Impression 2.0 (and even Impression Junior) will change some of the things such as nested frames and local style effects which are presently in Ovation but not in Impression. Ovation may get a spellchecker and hyphenation which is so good it makes 2M a must for everyone. I am also a much more proficient and practiced Impression user than I am with Ovation, so let's have comments from some of you experts out there. Make no mistake, Ovation is a very powerful application with a lot of nice features. It is very inexpensive compared to anything of similar power on a PC and I would certainly prefer it to Acorn DTP. Thus far, I am not convinced that I need to change from Impression but if you are thinking of buying a DTP program it is worth getting the demo disc from Beebug and trying it out. Wordprocessing

is certainly possible and preferable to the likes of First Word Plus and Pipedream if you have a fast printer—Laser direct or ArcLaser—otherwise printing will be high quality but slow—owing to its graphics base. I will do a similar job on Clare's Tempest next month and hope to look at 2.0 Impression and Impression-Junior in the not too distant future. I will endeavour to get as much information as possible about support and likely improvements from Acorn, Clares, Beebug and Computer Concepts so that I can give some comparisons at a later date.

End bits

Computer Concepts are currently working on Equasor: a mathematical formula processor which will be usable with any other RISC-OS application and a table generator which will again work with any RISC-OS application. The latter will automatically put boxes round ASCII data or CSV files from spreadsheets using drawfile format.

On the subject of DTP support software, take a look at the review of Poster in last month's Archive. This and FontFX are very worthwhile tools and, when used in conjunction with a RISC-OS DTP program, will ensure that results comparable with (and in many cases surpassing) those on any other machine are possible.

You will probably have noticed that another Qume based printer is now being advertised in Archive and elsewhere. Calligraph produce ArcLaser which is a direct competitor to Laser Direct. Although there may be some differences in speed these are likely to be small in comparison to the gain in speed both printers will exhibit over laserjet and postscript (for graphics) printers. If this is the case, the most relevant decision criteria between the two is likely to be price, software support and confidence in future development. I'm really beginning to enjoy this! It's nice to be able to tell my PC colleagues that not only are they using dated technology, they are also paying through the nose for it! Even if System 7 on the Mac and display postscript on PC's do become new standards, the cost of up-grading to these and modifying existing software will mean that the Archimedes will remain the best on price/performance for DTP for some time.

Initial impressions of Ovation

Simon Burrows

Ovation, the long awaited DTP package from Beebug

(written by David Pilling, although nowhere is he credited for it) is now available in a pre-release form, which is complete except that the spelling checker and hyphenation facilities (which will not work on a 1M machine) are missing. If you buy it now, it will be upgraded to the full version when it becomes available.

Ovation is supplied in very similar packaging to Computer Concepts Impression and further close similarities are evident in most aspects of Ovation. It is supplied in a large box, with loose leaf manual, four discs with colourful labels (which get marked and spoiled as easily as the original Impression labels!) and a quick reference card. There is no dongle... but before you cheer, it is protected in a way which I think is even worse—comprehensive software protection. The master disc cannot be copied with any of the known disc copiers and software supplied allows you to install ONE working copy on your hard disc or another floppy (again protected). If either copy gets corrupted or you accidentally move the Ovation application to another directory which causes the protection to stop it working, you are left with only one copy to use forever after. Sometimes the protection on my copy stops it working for no apparent reason—it loads OK when I try again.

The Program Disc contains the Ovation application, 'Install' utility, System Folder (Impression doesn't need this) and Printer Driver. The Work Disc includes the Beebug Outline Font Pack containing 13 Outline Fonts, which are very similar to the standard Acorn ones but avoid Beebug having to pay Acorn Licensing fees. Various sample documents, pictures and text files are included on this disc. The Extras Disc contains a utility called !CharSel, which is an enhanced clone of Acorn's !Chars utility supplied with Impression. A module is supplied which provides extra screen modes and there are a selection of frame borders which can be loaded into Ovation. The Clipart Disc contains seventeen Ovation Documents containing assorted Clipart. There is a very nice picture of an Archimedes, but apart from that, most of the Clipart is not very useful (e.g. flags of the world, Christmas items and musical instruments). They are well drawn.

Clicking on the Ovation icon on the icon bar, a scroll with an Impression-like quill opens the Ovation window. The most noticeable feature is a set of tools along the bottom of the window (a bit like those in

!Draw). Clicking on the menu button brings up the main Ovation menu containing eleven menu options, each with its own lengthy sub-menu. This compares with five main options in Impression, where the philosophy was to keep menu options to a minimum to make it quick and easy to use, whilst remaining powerful. Most menu options include the keyboard shortcuts, using a special notation (e.g. 'Show Print Margin ^M' meaning press <ctrl>M). This makes the menus look particularly complicated and unsightly. Ovation has a huge number of keyboard short cuts, which is why a quick reference card is supplied.

Ovation does not allow you to save any configurations and it always opens its first window at size 100%, which for most monitors is too large. When documents are saved, they are saved as a single file rather than as an application as with Impression. This is better since you can rename documents without losing the sprite and when cataloguing a document disc you do not have to wait for the individual sprites to be cached. Another excellent feature is the 'Auto Save' facility, which enables you to select a time period for saving a document as you work on it. There is also a 'Revert to Saved' menu option, which is useful. You can also save special 'Style-sheets' which contain paragraph styles, master pages, and so on.

Ovation does use the text 'Styles' which some people do not like on Impression, but it also allows you to select fonts, sizes, styles and formats directly from a menu. I understand that Impression 2 will feature this, but I have yet to received my upgrade (hint hint!).

Ovation has various modes of operation, selected by clicking on the 'tools' in the bottom of the Ovation window (a bit like Acorn DTP) which can be rather confusing at first. Sprites and draw files can be loaded into windows. Dragging graphics objects with <adjust> moves their frames around the document, whilst dragging with <select> moves the object around within the frame. There is a useful option to scale an object to fill its frame. Unlike Impression, it uses the standard RISC-OS dialogue boxes and icons, which quite frankly look quite crude compared with the elegant ones used in Impression. Ovation has a useful line drawing tool, allowing you to construct lines for tables, etc quite easily. This

facility is not present in Impression, although it has been promised for the future.

Overall, I would say that Ovation has tried to copy as many features as possible from other packages and has succeeded in being a very good package. In some aspects I feel that Beebug have steered away from what is best just in order to make it less similar to Impression, from which many of its features have clearly been lifted. Future versions may well improve on it, as will happen with Impression, clearly its main competitor. Cost is important in choosing which to buy, although if you shop around, Impression can be bought for virtually the same price as Ovation. I do feel that at full retail price Impression is over-priced. Ovation is very good value for money, so I can only recommend that you see both before deciding and if possible wait and see what Impression 2 and Tempest are like. An Ovation demonstration disc is available, and both Ovation and Impression come with a full money-back guarantee (the only advantage of copy-protected software!). **A**

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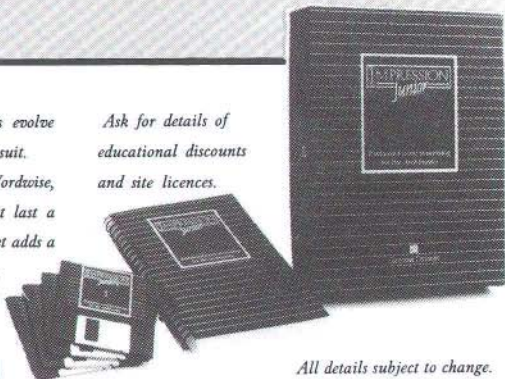
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ArcDFS from Dabs Press

Richard Ames

For many years, we have run a couple of much expanded Beebs, one of their many tasks being to produce printed cassette labels. The filing system we have been using is the Solidisc DDFS 2.1 multiple catalogue system because it enabled us to have more than 31 files per disc. With each cassette label occupying a maximum of 128 bytes, the limit of 31 files would have been very wasteful in discs, as well as requiring a search through several discs for a particular label when we required further cassette copies.

The Solidisc DFS system filed the first 31 files and then by reducing the space available for the disc title, cleverly used a few bytes of the current catalogue sector to give the address of the sector containing the next catalogue, and so on. As far as I know, the only limit is the disc size – I have one disc with 8 catalogues on it, that's 8 x 31 files!

When we bought our first two Archimedes, there remained all these files on 5.25" disc which couldn't be used. We tried several "DFS reader" type programs, some by large user groups, some PD software – none seemed able to get past the first catalogue on Solidisc discs. I'm told the same problem also occurs on Watford double density (double catalogue) discs. The other approach was to port the files over from the Beeb to the Archimedes, using a serial link: this gave control to the Archimedes and used the Beeb as a remote filing system. However the various software packages we used still seemed incapable of looking for any more than the first 31 files!

Then I encountered David Tomlinson at Dabhand Computing, who told me of the ArcDFS they were writing for the Archimedes, which he said should take care of all these multiple-catalogue problems. I persuaded him to let me have a pre-release version of the Dabhand software and it seemed to be the answer to all my problems. The program written to generate the cassette labels was directly transferred to Archimedes BASIC, as were the first few files from 5.25" disc. Now it seemed that I had the means to transfer the rest, leaving the Venerable Beeb to rest in peace.

I had a self-powered 5.25" disc drive handy and an extra disc interface on the Archimedes so I was off.

If you plug the drive into the computer, insert the Dabhand ArcDFS into drive 0, click on the drive icon and then double click on the resulting !DFS icon you will find that, as well as the two ordinary coloured Archimedes ADFS drive icons, up come 4 DFS (grey) drive icons on the icon bar, numbered 3, 2, 1 and 0. Insert a 5.25" DFS disc and click on the icon – there, as if by magic, are all the files from a Solidisc disc which many software writers said could not be accessed!

Now it is such a simple task to drag the files required from the DFS drive viewer to either of the ADFS (Archimedes) viewers. Alternatively, one could do a "backup" of all files on a DFS disc onto an ADFS, using the Dabhand ArcDFS. I understand, although I haven't tried it, that this process works in reverse should you need to create DFS discs. I only needed to use this program for shifting my files from 5.25" to 3.5" in a form which could be read by the Archimedes, but if you need to update your 5.25" DFS discs and continue to use them, this product would work.

By the way, the manual supplied with the production version explains all this in a much better way than I have just done. It is well written and has a multitude of screen shots, seemingly one for each key press. The first (start up) pages are almost simplistic, as they should be: one line instructions for all the simple parts of the program. When the more esoteric parts are covered, the more familiar listing/explanation, dictionary system is used; common to other manuals. The only grouse I have is the usual one – what do you look up to do a particular job? If you know what does what, you probably don't have to look! Despite this minor moan, I would say that other manual writers should use this one as a model for further works.

At first I made the common error ("common" according to Richard Averill, the author of this package) by assuming 3.5" means ADFS and 5.25" means DFS. In fact, as he points out in the manual, any disc can be any format, any density! This means that a disc can be made with the Archimedes for use by any of the preceding BBC formats – a very useful "backwards compatible" feature.

When the production version arrived, it contained, in addition the advertised functions of reading DFS discs, a wealth of extra features. These included a formatting facility which works in any of the supported formats e.g. Acorn, Watford, Solidisc; in any density, double or single. Of course, this also included verifying but I didn't expect to be able to find out the "free" space on any of these discs, or even to rename the disc, although I was beginning to expect the unexpected by now!

A very useful extra is the facility to be able to "write protect", in software, any of the drives. However, by far the most exciting extra on the production disc is the RAMdisc facility – this enables "an area of memory to be used as a disc for storage under DFS in a similar manner to RAMFS in RISC-OS... the RAMdisc is controlled entirely by the DFS... the advantages of the DFS RAMdisc are the high data transfer speed and convenience, especially if you are using only one drive with ArcDFS"

So, for example, a heap of files can be loaded into a section of memory and various operations carried out on them and then the lot restored to magnetic disc for archive purposes. Such operations would be required repeatedly, for example, when updating a customer file and order/invoice records, together with stock control files. This is very much faster than the current system of loading, reading, altering the info and then writing back to disc. The RAMdisc

can be created in any of the supported formats to match exactly the data being transferred from magnetic disc. The system even allows you to change the drive currently selected as RAMdisc without losing the data stored in it.

By the use of a partition, which can be set up with the second part of the ArcDFS package, apparently three 80 track "sides" can be set up on an ADFS disc. This means a DFS disc can be contained in a file on an ADFS disc.

The limit of 71 files in an ADFS directory can be overcome by using the ArcDFS, and a Solidisc DFS filing system on 3.5" or 5.25" discs. However, it must be said that I'm not sure about using 5.25" discs now, as they need such a different handling technique to 3.5" – I've got used to being quite rough with the smaller, better protected discs!

I hope you don't think I've gone over-board about ArcDFS. In my view, a utility should be a tool that can be used easily which is exactly what this is. One should not have to struggle to get the thing working and be worried that the next experimental key press will crash the system or corrupt the discs. In the case of ArcDFS, there should be no need for experimentation, because everything is so well explained. In my view, it is well worth £28 (through Archive) even as a once-only package to transfer old files to the new system and even better value if it is to be used regularly. **A**

H.S. Maths Pack 1

Doug Weller

This program is aimed at children in Key Stage 1 (ages 5-7) to help them achieve the first level of the Maths Attainment Target in the National Curriculum involving counting. It also claims to meet the attainment targets involving patterns and understanding the use of a symbol to stand for the unknown number but I can't agree that it does this.

The game involves speaking pirates and parrots (these are digitised and very nice) which have to be matched, counted, ordered, etc. This involves the numbers 1-10, and teacher controls can alter the highest number used, difficulty level (i.e. mistakes allowed before the game ends, sound, etc.

A very nice feature of this program is that you can enter up to 36 children's names and the program

keeps track of their scores. They can then be printed out on any Epson compatible printer. The version I had, required you to move the pirates around the screen using the mouse. I found this quite tricky but I understand that a cursor key option is now provided which should be easier to use.

Conclusions

This is a cute, very simple program. It is written to do a fairly specific drill and practice job which many teachers might feel could be done just as well without a computer. Although it is aimed at 5-7 year olds, the pirate theme might make it useful for older remedial children for whom the use of the computer might also be an important motivating force. (£11.95 from HS Software.) **A**

PipeLine

Gerald Fitton

Thanks for all your letters with their problems and suggestions. In response to a large number of requests, this month I am going to devote some space to the problem of how to upgrade !PipeDream.

Installing an Upgrade

I have had trouble myself when upgrading and I've had more than one letter from people who have lost files that I've sent them (such as printer drivers) asking for a replacement. Another batch of letters is from people who think they have installed an upgrade but still get bugs that I have told them will be cleared by the upgrade – they think that they have upgraded but haven't!

I believe that part of the problem is the unhelpful default Copy\$Options that Acorn have built into RISC-OS. Have a look on page 208 of the Archimedes User Guide under *Copy and you will find the full meaning of all the following. The default Copy\$Options are A C ~D ~F ~L ~N ~P ~Q ~R ~S ~T V. Importantly, the default of ~N means that if you already have an old copy of, say, the !PipeDream.RunImage file then the newer one (it checks the date/time stamp) will **not** overwrite the old one. Also, the default ~R means that the contents of directories are not copied recursively so you have to go down through every subdirectory doing your copying to make sure you get every file.

My suggestion for Copy\$Options are A ~C ~D F ~L N ~P Q R ~S ~T ~V. The use of ~C means "Don't ask for confirmation", F forces an overwrite of locked files (you may not want to do this), Q means quickly by using workspace (I think I might have a "Spell can't close" problem due to this but I'm not sure so it may be better to leave yours as ~Q). However, I have changed to N (overwrite if Newer), R (Recursive through all subdirectories) and ~V (not Verbose).

Now, what is the best way of setting up these new Copy\$Options automatically. Well, I have added one line to the end of my !System.!Boot file namely SetCopy\$Options A ~C..., etc as above. You can do this as follows: hold down shift and double click on the !System icon, drag the !Boot file over the installed

(on the icon bar) !PipeDream icon, add the line and Save. I have a hard disc and !System is in the root directory so, when I open the :4 directory viewer, the !System.!Boot is run and my Copy\$Options change. You may have a floppy !System disc that you use every time you start up. If you have any improvements on these ideas, please let me know.

Edit the user dictionary

Just before doing a PipeDream upgrade is a good time to edit your user dictionary. This is the method: Click on Files – Short menus (to get rid of the tick and to have Long menus), from the long Spell menu run through Dump dictionary (or use <Ctrl>+SU). Make sure your user dictionary name is in the dialogue box and is selected, press <return> (or click on OK) and the dump will start. The default name of the dumped dictionary is DumpFile which is probably OK. When the file has been dumped, load it into !PipeDream (drag over the icon) and you will be able to edit it. Save the edited file. Now Spell – Close user dictionary (<Ctrl>+SZ). Next, use the directory viewer and the mouse to rename your old user dictionary. Then, Spell – Create user dictionary (<Ctrl>+SN) putting back the old name (as used by your ini) and, finally Spell – Merge file with dictionary (<Ctrl>+SM) to merge the DumpFile with the new blank dictionary. Don't delete the DumpFile if you are upgrading (see below). Quit from the icon bar. Well done!

Disc copying

The next step in upgrading is to format a (new or unwanted) disc or create a RAM disc and copy all the files on your new master disc (containing the upgrade) to the new disc. Copy files you may want from your old version to your new version. For example, I have customised my !Path and I have ini and key files as well as my versions of some of the Pipedream printer drivers. You can copy over your user dictionary but I think it's better to copy over the DumpFile instead and create the new user dictionary after the upgrade. If you have the old !PipeDream on hard disc, rename it as say, PipeD307 (better without the !) or back it up onto a floppy and then delete the hard disc version. Install the new !PipeDream (e.g.

copy it to your hard disc) and *then* look at the files it contains and delete those you don't want such as examples and printer drivers or !123. Whilst you're doing this, use the Display - Full info to look at the dates of the !System.Module files such as the Floating Point Emulator and see how they compare with the ones you have - you may want to upgrade yours.

Finally, Quit from the icon bar, switch off or <Shift>+<Reset> and see whether everything works. In particular, install the new !Pipedream on the icon bar and check (with the mouse menu button) that Info tells you you have a new version and check that your ini and key macros have still been loaded. Create your user dictionary, merge the DumpFile with it and then Spell - Pack user dictionary (<Ctrl>+SP). You can browse through your user dictionary to make sure it is OK but remember, the (merged) user dictionary is only saved to the disc when you Spell - Close user dictionary (<Ctrl>+SZ) or Quit PipeDream from the icon bar.

Quitting and closing files

Always quit PipeDream from the icon bar if you want it to save the changes you have made to your user dictionary and close properly. Generally, with *all* applications, *don't* just switch off but close down gracefully to give your applications a chance to close any open files.

Text in numeric slots

What is the value returned by a formula that usually refers to a cell with a number in it but which, for some reason, contains text instead? Take as an ex-

ample a file of invoices with #s in column C and the 15% VAT extension in column D. The VAT in D21 is worked out with the function $0.15 * C21$ (or, if you prefer, $(INT(15 * C21 + 0.99)) / 100$ to round up) but what if you can't find the invoice and want to write a comment in C21 (e.g. Lost Invoice) instead of a value? In column D the formula returns the words (Lost Invoice) from C21. Perhaps you don't want this and would prefer either a blank or a 0. The way to get a zero is to use an if construct such as $if(C21 >= "", 0, (0.15 * C21))$. You get a blank with $if(C21 >= "", "", (0.15 * C21))$. The file VatFile is an example and is available on the monthly disc in the usual way.

PipeDream treats text in numeric slots this way so that, if you make a mistake (or should I say when!), the words are displayed to show you that there has been a mistake. If the value of the text were made 0 automatically then you wouldn't spot the error so easily; PipeDream works this way so that you get a clue where the mistake is.

Comparison rules OK

This brings me round to comparing numbers with text. Numbers are always smaller than text so that $if(C21 >= "", true, false)$ will treat the condition as TRUE (and work out the *true* formula) if it contains any text. Blank numeric slots are forced to match zero except for such functions as *avg(range)* which treat a blank as non-existent when calculating the divisor. The disc file Compare (available in the usual way) shows the result of comparing a -1, 0, +1 and a blank slot with a blank and a text slot. A screen dump of this file is shown below.

PipeDream: adfs::20_34_Sat.\$\$.PL9009.Slots.Compare					
A1					
	A	B	C	D	E
1			a1=b1	a1>b1	a1<b1
2					
3					
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100					

Splitting a two-part text slot

Suppose you have a database file having a column of text slots containing Bill Bloggs and the like. If you want to split it into two columns this is a way. Mark the block and then search for the space (^S) and replace with a <Tab> (m). It takes a bit of practice to know exactly what to expect. Save the new file as a <Tab> file and then reload in <Tab> format – with any luck the column has split in two.

Using !PrinterDM with continuous stationery

Usually !PrinterDM is used with a sheet feeder rather than continuous stationery so there are some inconsistencies which appear when you use the latter rather than the former.

It may help if first I describe how the RISC-OS driver !PrinterDM is supposed to work with a sheet feeder. Use the menu button over the installed !Printer icon and you will find a Page size option (if you don't, then upgrade to version 1.12 – see last month's column). This Page size acts as a mask which cuts off anything larger than the set page size. Set up your borders as described in the October 1989 issue of PipeLine (that Pipeline file and a !Draw file which helps are on the July 1990 PipeLine quarterly disc). If your page size is set longer than the physical page (i.e. the size of a single sheet – the default is A4 and not 11") then the sheet feeder will send a second sheet to the printer so that the end of the page (as sized in Page size) is printed at the start of the second sheet. If the physical page is just shorter than the Page size this can cause a blank sheet to be fed out between printed sheets (fine tuning is required here).

Now let me describe the relationship between Page size and the page breaks set within PipeDream. PipeDream page breaks send a form feed which !PrinterDM passes on to the printer. The printer will then do whatever it thinks it ought to do when it gets a form feed. If a sheet feeder is used, this causes no problem. However, if you are using continuous stationery, the printer moves the paper on to wherever it thinks the current top-of-form is! This is the default set by switches inside the printer and the only way to change this is to use a code which is entered into the !PrinterDM driver to set a different value.

How do you do this? In your !PrinterDM directory you will find a file called PrData which is in !Edit format. You can load this into PipeDream and you

will see a range of printers defined: none of mine use the job_prologue feature but you will see the other features defined for all printers. Decide which of the printers suits you best and, at the end, after job_epilogue, add a line such as:

```
job_prologue: "<27><67><70>" ;
set page length 70 lines
```

If you want to define a new printer style completely then you should copy one of the others (block copy in PipeDream) and modify it to your liking.

Composite characters

Many 'foreign' characters have an accent above the letter. A composite letter is one which does *not* exist in the standard typeface and so you have to make it up out of two. Using the outline fonts every character has a 'bounding box', the space occupied by a letter. To make up a composite letter you need some way of putting the ^ say into a zero width space (i.e. the ^ is printed and then the cursor is backspaced to where it started from). Some fonts from some suppliers do provide this facility. Often the characters from about 128 to about 134 are used but my example is taken from EFF's MathGreek font which uses characters 192 to 196 for capitals and 224 to 228 for lower case letters (mathematicians often want to put circumflex accents above Greek or English letters). Consider the character Î. This is created in PipeDream using Print – Insert font MathGreek and then entering the code for the accent (<Alt>+192) followed by the code for the capital gamma (a capital G from the keyboard). Note that the accent is typed in *first*. An example of a lower case composite is ŷ which uses code 224 for the lower case circumflex accent. If Paul can reproduce this as it appears in the hard copy I've sent him (*Yeah! No problem! Ed.*) then you will see that the accent that goes with the lower case gamma is lower on the line than the one which matches the upper case gamma. By the way you can enter top bit set characters for the ^ ~ ' ' ' using !Chars as described last month.

Help wanted

RISC-OS drivers for other printers – I am getting many questions about modifying RISC-OS drivers but not too many solutions.

In addition to my standard user dictionary, I have a user dictionary of specialist terms too large for the monthly disc that I have built up over the last few

years. You may like a copy: it will be available on the October PipeLine disc. If you have a DumpFile of technical terms suitable for such a dictionary which you are willing to donate then please let me have a disc copy.

Improvements to PipeDream 3

To date, I have had the following suggestions for improvements to PipeDream:

An option to **Save** in a format *without* either LF or CR. This is the format used as a common input or output option of many packages from Wordwise to Ovation.

A **New View** option. Yes, I know you can fix rows and columns *and* you can **Load** in two copies of the same document but they are totally independent (you don't see the effect of a change in the other window).

A **Scrap File** or something similar such as **Virtual Memory** on disc. This would work by letting you keep a huge PipeDream file partly in memory and the remainder on your disc. I think Acorn DTP has this facility.

A **Hyphenation Dictionary** which splits word processed text across a word wrap boundary. Many DTP packages have such a facility.

A **SpellDump** facility. The idea is that, when you come to **Spellcheck** your document, instead of offering you the option of inserting an unknown word into your User Dictionary, all unknown words

are dumped to an !Edit format file which you can later load back into Pipedream, edit it further and then **Merge** the remainder with your User Dictionary.

Disc Copies of PipeLine Files

Disc copies of all the files mentioned in this article (except the October 1989 article with its !Draw file – on the July 1990 PipeLine disc only – and the Technical User Dictionary) are available from Norwich Computer Services by buying their monthly disc. All the new files (and much more) will be on the (£5.00) October PipeLine disc available from Abacus Training at the address on the inside of the back cover. By the way, an annual subscription to the quarterly PipeLine discs, four issues, will cost you £18.00 including UK postage (or £13.00 if you've already bought the July 1990 disc).

Contributions

Problems for the 'Help Wanted' section as well as contributions which show how to do something interesting or difficult will be most welcome. If the PipeLine disc scheme works out OK then I hope to be able to pay you something for items used on the disc. So, if you have a problem or an extended example, I would prefer it on a disc. That way you can save giving a complicated descriptive explanation, there will be no doubt as to what you mean and, with your permission, I can make the problem and its solution (or your extended example) available to others on disc more easily than I could do otherwise. **A**

MultiFS from Arxe

Brian Cowan

Readers will know that in the past I have discussed the need for a DOS filing system for the Archimedes. I subsequently discovered !PCdir written by Keith Sloan and !DosFS which was developed by Rob Schrauwen. Now there is another competitor in the field: MultiFS from Arxe Systems Ltd.

MultiFS is a remarkable product. I reckon that if you were to do a market research survey on what people wanted from a disc filing system then you would end up with the specification for MultiFS. I have been evaluating a review copy of MultiFS and I am quite impressed. Arxe stated that my version was a Beta test release so not all the features were present. I

intend to produce a thorough review when the final version arrives, so please regard this as more of a preliminary report.

The features

What does MultiFS do? To start with, it can read and write discs in the following formats:

- Double-sided MS-DOS floppies
- Single-sided MS-DOS floppies
- Archimedes PC-Emulator winchester partitions (ST506 or SCSI)
- Double-sided Atari ST floppies
- Single-sided Atari ST floppies
- BBC DFS single-sided 80track discs
- BBC DFS double-sided 80track discs.

Since MultiFS is implemented as a filing system, it can be used from the command line and selected as the current filing system. Then, for instance, in a BASIC program, LOADs and SAVEs will be performed in the desired format.

Formatting discs

My version of the product also allows you to format discs in DOS and Atari formats. At the moment you can't format BBC DFS discs but that should be available on the release version. For DOS discs, there is the option of writing the boot track to newly formatted discs. There are some copyright problems to be sorted out here but again everything should be sorted out in the release version.

File extension problem

There is always a difficulty in converting file names between DOS and ADFS. The problem is the DOS file extension. The solution adopted in MultiFS resembles Acorn's conventions with their various language compilers. Using a DOS computer (ugh!) if you wrote a Fortran program called "FRED", the program as typed in would then be called FRED.FOR. You would compile this to object code which would be called FRED.OBJ and finally you would link it, to produce the executable image called FRED.EXE. So there are three files called FRED, each with a different file extension.

Doing a similar thing on an Archimedes, each of the files is stored in a different directory and this is the convention adopted by MultiFS. Thus, when displaying a DOS disc containing the above files, one would see three file extension directories. These would be called FOR/, OBJ/ and EXE/. The slash (not part of the Acorn convention) indicates that this is a file extension "directory" rather than the usual type of directory.

MultiFS

As discussed above, DOS is not the only format which MultiFS supports. Atari format is similar but as I have no experience of it, I will not discuss it further. Having BBC DFS in the same module is, at first sight, surprising but on consideration, why not? If you think what the Archimedes ADFS does, you will realise that it has to recognise and support three different formats: L, D and E. The filing system must recognise which format the disc is and then read/write accordingly. Thus, the idea of a "multi"

filing system is not so strange. In this way MultiFS supports DOS, Atari and DFS formats.

In theory this is a wonderful idea but, in practice, it can be confusing. When you click on a disc drive icon, you don't know what the format of the disc is. This is my first complaint. The full pathname is MultiFS::DiscName.\$..., and MultiFS is not very meaningful. It would be nice if there were an indication of the disc format. This is not difficult for the software to find out but I am not sure how best to display it.

Slightly connected with this is the following point: if you have an ADFS disc in the drive and you click on the MultiFS disc icon then you get the error "not a DOS or DFS disc". This is quite sensible but it could be arranged in such cases for MultiFS to invoke the ADFS filer and thereby access the disc. That would be a truly "Multi"FS.

BBC DFS discs

This product has so many good ideas. One problem I always had with DFS discs was to remember to look on the other side. MultiFS does not allow you to forget. If you examine a disc in Drive 1 then the directory viewer shows you two directories. One is called 1 and the other is called 3. These are the drive numbers of a double sided DFS disc drive. All side 1 is in directory 1 and the other side is contained in directory 3. A simple idea, but those are the best. (Shareware disc 31 has a DFS implementation written by Emmet Spier. This would be an ideal addition for him to consider.)

Icons galore

I have only one further criticism of MultiFS. When you invoke it, you get a MultiFS icon for each active drive. So on this machine I am using now, I have one internal (ST506) hard disc, two floppies and a SCSI 20M "floppy". Both the hard disc and the SCSI have DOS partitions, so when running MultiFS, I have eight drives sitting on my icon bar! If my idea of hooking MultiFS into ADFS were followed then one could dispense with the ADFS icons altogether. But then how do you distinguish between the ADFS hard disc and the DOS partition on it?

Extra features

For the release version, Arxe are planning to add the following features:

- Adding directory cacheing – this will significantly speed up operations on groups of files, e.g. copying, deleting, etc.
- Renaming/deleting across directories
- Automation of creation of system discs
- Inclusion of non-copyright boot sector block (DOS)
- Utilities for translating DOS files
- 40 track disc drive support

Future developments being considered include non Acorn BBC DFS formats, Acorn C/PM formats, Amiga DOS and Mac.

The competition

In comparing MultiFS with the “PD” programs !PCdir and !DosFs I would make the following observations. !PCdir is a very versatile program. It only works with DOS formats, including one DOS partition on an ADFS or SCSI hard disc. Its main limitation is that it is not implemented as a filing system so it can’t be used from the command line. This limitation does not apply to !DosFs but that

program only supports a single internal floppy disc. Incidentally, the latest version of !DosFs (not that on Shareware 31) has a beautiful utility to treat the DOS file extension in a number of ways and also has various CR/LF conversions.

Considering BBC DFS systems, I have not seen the Dabs Press product which also supports a range of non-Acorn DFS formats (*see the review on page 30. Ed.*), but I have used !DFSreader by Emmet Spier (Shareware 31). Despite its name, it writes as well as reads. The current version only supports Acorn DFS but other formats may appear. It works well from the desktop but bear in mind that it is not implemented as a filing system so it can’t be used from the command line.

Bottom line

You will have gathered that I like MultiFS. A lot of thought and care has gone into this product and it is a joy to use. When the release version appears I will let you know if it comes up to expectation. At £36 it is really good value. **A**

First Word Plus Column

Stuart Bell

It may be because it’s the holiday season or it may be fulfilment of last month’s comment that FWP is now such a stable product that there is becoming less and less to say about it but my postbag has been very small. However, !1stFile, the FWP file format changing application, has been in great demand.

HP DeskJet Plus

Primarily intended for use with Impression, my DeskJet Plus arrived this month. Although I had planned to continue using my daisy-wheel printer with FWP, the ease of use of the DeskJet seems to be winning! Archive’s Shareware 6 disc contains FWP drivers for the HP DeskJet – which needs to be extended to use the extra features of the Plus. The draft quality – which uses far less of the expensive ink – is comparable with LQ quality on dot-matrix printers and as the price in PCW adverts is as low as £499 + VAT, and that effectively includes a sheet-feeder, I’m very impressed. Strongly recommended for FWP users!

Back-up files

Barry Watts writes first to announce that he’s

completed the task of importing files from his old Amstrad PCW and can now ‘sleep at nights’ after a rather messy process. If anyone is having problems with transfers from PCW, he offers to help. Then, he raises the issue of the loss of the ‘bak’ file facility which, in FWP1, kept the previous copy of a file. I lamented its loss in my review of FWP2 (Archive 3.4 p.40) and Barry asks if there is an obvious way of implementing it in FWP2.

Memory allocation

Keith Raven notes that as FWP grabs all free memory on his A3000 so that there is then no way of loading !1stChars without either quitting FWP, loading !1stChars and then reloading FWP, or else pinching memory from some other area. This is rather like the problem I encountered with using Mode 16 after Mode 12. The answer is to add a suitable ‘-max’ entry to the line

```
WimpSlot -min 416k
```

in the !Run file for FWP2. I use ‘-max 496k’ but it’s worth playing around with so that perhaps 32k is left after loading FWP2 for other small applications such as !Calc as well as !1stChars. (The alternative,

of course, is upgrading the memory—£60 for A410, £90 for A3000 and £360 for A310.)

Printer drivers still needed

Alan Booth needs a FWP driver for an HP LaserJet II or an Epson GQ5000. Since my new DeskJet is supposed to be LJ compatible, albeit only implementing a subset of the LJII's facilities, I've sent him that as a stop-gap for the former but can anybody help, please? Write to me and I'll forward anything on. Also, someone wrote to the Archive office for a driver for, and help with, a KXP-1124 printer with FWP. That's no problem (see Archive 3.2 and that month's program disc) — except that the enquirer didn't sign his name, so I couldn't reply directly.

Modified !1stChars

Finally, Colin Singleton has written about his experiences with FWP2. He's got used to dragging files to save them, preferred the old system for getting the keypad and character set automatically but mourns the loss of a key to enter 'insert' mode. His main purpose in writing is to address the problem that under FWP2, !1stChars not only fails to show

what special characters can be printed with your particular printer (as FWP1 did), with the effect that you can't tell what can and what cannot be printed, but that he can't get enough special characters with !1stChars to print all those which are available on his Amstrad LQ5000di. His solution is to modify !RunImage in !1stChars so that it changes the template for the display before the window is opened and the character set displayed. It's very clever but quite complex and inevitably printer-dependent, so I've asked Paul to put it on the program disc for this month. Thanks, Colin.

Au revoir

That's it folks! Playing with Impression calls — although I continue to use FWP for most small jobs. FWP may no longer be state-of-the-art (by the time it was ported to the Archimedes, it was already rather dated) but we do have the pleasure of using the most exciting affordable 'hardware platform' in personal computing. Happy computing and watch out for the dreaded doMeSDOS — it kills 99% of all brain cells, although with Windows 3, it makes a passable attempt at looking like RISC-OS. **A**

!Splice and !Tween

Malcolm Banthorpe

!Splice and !Tween are the latest additions to the family of graphics applications from Ace Computing. The family already contains !Euclid, the 3D graphics editor and !Mogul, the animation add-on, which were reviewed in Archive 3.1. Both the new multi-tasking applications are also for use with animations: !Tween generates two-dimensional animations from drawfiles while !Splice is a utility for editing and modifying "films" produced by both !Mogul and !Tween. Both of the latter employ Ace film format, which can be displayed using the public domain utility, !Projector, supplied with these applications.

!Tween

As its name suggests, !Tween works by applying the process of "in-betweening" to two or more two dimensional drawings, previously prepared using the Acorn !Draw application. It is supplied on a single unprotected disc together with a twelve page instruction booklet which contains all the information necessary to get started, together with a description

of the facilities offered and some examples to try. Further documentation is included on the disc. If you are working with a single 3.5" disc drive then, in order to minimise disc swapping, it's a good idea to create a work disc containing both the !Tween and !Draw applications.

Producing an animation

To produce the very simplest animation, the sequence of events would be something like this. First click on the Tween icon on the work disc in order to install it on the icon bar. Clicking <menu> on the icon will then give you the opportunity to create a new Action file, which will eventually contain the script for the animation. At the same time, a spreadsheet window will be opened, the form of which is similar to that of a planning sheet for conventional animation, but which is referred to as a dope sheet. Then you need to create a new "Toon"—described in the instructions as a directory of alternative shapes formed from drawfiles. Once you have supplied a suitable name, the directory is created for you and its viewer opened.

Now start up !Draw. There should be plenty of room for !Draw and !Tween to multi-task on a 1 Mbyte machine; between them they claim 416k of work-space. Create a drawing of your choice – perhaps just a simple filled shape constructed from curves or straight lines. Save the result in the new “Toon” directory and call it, say, drawfile1. This will become the first frame of the animation. Now modify the shape in some way without changing its basic structure. That is, you can change its outline, colour, size, rotation or position but not add or delete any lines. Save this as drawfile2. For the purpose of this example, I’ll assume that a 50 frame animation is to be generated.

Move the mouse pointer to the top of the spreadsheet, to the slot in the column headed by the name chosen for the Toon, and on the row marked “frame 0”. Pressing <select> repeatedly will cycle through the names of the available keyframes – in this case just drawfile1 and drawfile2, the former being the one required. Scroll down to frame 49 and select drawfile2. At this point, the animation has been defined as starting with drawfile1 and changing linearly to drawfile2 over a period of 50 frames: about 2 seconds running at normal speed. The animation script or dope sheet could now be saved for future use.

At this stage, it is possible to preview any of the 50 frames that will make up the animation frames. It will be useful to look at frames 0 and 49 to check the framing. By default, the drawfile objects will be positioned at the lower left-hand corner of the frame; they may be dragged to any other desired position in the preview window. As mentioned above, any of the 50 frames can be examined but only the marked keyframes may be modified. To actually create the animation, click on <menu> and select “record film”, supply a suitable filename and drag the film icon to a directory viewer. You can then sit back and watch the film being generated frame by frame. This will take from less than a minute for a simple example like the one described, to as much as 30 minutes or more for films of greater length made from more complex drawfiles. The film may then be viewed simply by clicking on its icon, provided that !Projector has already been “seen”. As films may frequently extend to several hundred kilobytes, it may well be necessary to first close down !Tween and/or !Draw on a 1 Mbyte machine.

As is frequently the case with RISC-OS applications, the above description of how to create a film probably makes the process sound a great deal more complex than it actually is. In practice, there will often be more than two keyframes and it is possible to have more than one Toon, that is, more than one set of related drawfiles. Any of the normal objects associated with drawfiles may be included. These are: paths (i.e. lines and curves), text, text areas, sprites and groups of any of these. Within any given Toon, all the drawfiles must have a common structure, that is they must all contain the same objects in the same back to front order. To make full use of the program it will be useful to be familiar with !Draw and particularly with the concept of grouping sets of objects.

Movement of individual objects and of groups is achieved by moving them within the original drawfiles. This can include scaling and, in the case of paths, rotation. The Action window always contains a special Toon called camera which can may be ignored if you wish, as in the example above. It is employed where more general movement, including zooming but not rotation, is required; the effect being similar to that of moving the rostrum camera in conventional animation set-up.

Apart from producing cartoons and moving diagrams, it is possible to create animated text which could be used in titles sequences, either to be displayed at the head of computer programs or on video tape. Text and text areas within drawfiles can generally only be moved and scaled. However, by first converting the text to a series of paths using !FontFX or (rather more long-windedly) by using !FontEd, some spectacular effects can be achieved with little effort.

!Splice

!Splice Films produced by both !Tween and !Mogul are limited to a maximum of 250 frames (10 seconds). Using !Splice, films may be joined, up to any length within the limits of available memory. As they both share the same format, films created by !Tween and !Mogul may be inter-cut if required.

Like !Tween, !Splice is supplied on a single unprotected disc. Once it has been installed on the icon bar, either clicking on a film file or dragging it onto the icon opens a scrollable window displaying, at reduced size, all the individual frames of the film.

Joining a second film to it is simply a matter of dragging it into the same window. Individual frames or groups of frames may be deleted if required. It is therefore possible, for example, to create a !Euclid film sequence by inter-cutting separately created wide shots, close-ups, cut-aways, etc. Any individual frame may also be modified using !Paint. Again the operation is just a matter of dragging that frame onto the previously installed !Paint icon. This leads to a further possibility. If you have the time and patience, it is possible to create an entirely hand-drawn film by constructing each frame from scratch with !Paint. Further options allow the frame size of a film to be changed and the saving of the whole film, or a just

a selection of frames, as sprites rather than in Ace film format.

The complete family of !Euclid, !Mogul, !Splice and !Tween used in conjunction with !Paint and !Draw now forms a very powerful animation system and thanks to RISC-OS multi-tasking they all work together effortlessly. !Tween will be attractive to both to existing users of !Mogul and to newcomers to animation while !Splice must be considered an essential accessory to any but the most casual user of either.

!Splice and !Tween each cost £30 from Ace Computing (or £25 each through Archive.) **A**

MewSoft Fancy Labeller

Doug Weller

Another handy package from MEWSoft, who also make The Forms Manager. This is a package which allows you to create and print fancy labels. It is made up of three programs.

Frame Designer

Frame Designer allows you to draw fancy frames. I found it amazingly simple. You are presented with a grid on which you draw not the frame but the pattern you want for a corner, for 2 character blocks of the top and bottom rails and for 2 character blocks of the side rails. What you design is automatically repeated (and reflected and inverted where appropriate) so that you can design a frame almost within seconds. The disc comes complete with over 20 fancy frames already designed to start you off.

Font Designer

Font Designer allows you to (surprise!) create or edit fonts. Again this is very easy to use, with a mirroring facility allowing horizontal or vertical

mirroring (i.e. the top half onto the bottom or the left half onto the right). The program comes with 8 fonts which the novice or the lazy (efficient?) person can use as the basis for creating their own fonts by editing the supplied ones.

Printing

The Printer allows you to edit your labels, which can contain one fancy font plus the system font. Here's where some of the fancy BBC system fonts you may have are useful! When printing, you can set the label size to fit the size of your sticky labels. You can also print more than 1 column at a time.

Frames and labels are saved separately. This means that you can load in a label and then experiment with different frames without changing the text or font.

This is a lovely, easy to use program. I use it to do cutout labels for my classroom, and the example labels include book plates, spice/jam jar labels, party invitations, disc labels, etc. (£27.90 from MewSoft.) **A**

!Help – Teacher's Companion

Kevin Beales

!Help – A Teacher's Companion to the Archimedes and A3000 by David Eccles, Sherston Software. £4.95 inc VAT.

I am a teacher who, for one reason or another, missed out on the early explosion of BBCs into

schools. Later, a real interest developed but it was handicapped by the fact that I could never afford to buy my own machine. So, when required by the changes in education to teach using an A3000, much midnight oil was spent scanning manuals and struggling with unfamiliar terms. I therefore turned to this Teachers' Companion with some interest.

The author is the director of an LEA Microtechnology Centre and should be aware of the needs of people like me. Indeed, he states his aim as being to help teachers who fear they are being "jargoned to death", something with which I readily identify.

The package consists of a disc and a 96-page, indexed booklet produced on Impression. The booklet is illustrated throughout with screen shots of menus etc, so that you can see what should appear on the screen if you are following the exercises correctly. The disc contains various examples of files together with the applications !Draw and !Paint. The reader is taken gently through a series of exercises from formatting, copying, file management and configuring the machine to the use of the two applications. These I previously studied with the aid of Acorn's

User Guide, so I used my son, Richard, as a "guinea pig" to see whether the exercises would help me to teach him. They worked fine. In one session, Richard produced several pictures from !Draw and both of us felt confident to go on and experiment. The same was true of !Paint and at the end of two sessions, he was able to create and manipulate sprite files with comparative ease.

"Confidence" is the word that first springs to mind when thinking of this package. Its simple, no nonsense style and steady progression will leave teachers and others who have little time to spend pouring over manuals, with the confidence to progress, to investigate and to experiment. Mr Eccles' modest target is hit soundly and the package is good value for money. I warmly recommend it to all. **A**

Using the PC Emulator – Part 5

Richard Forster

So far in this series, the only method we have shown so far for editing text files is by using the copy command. While this will suffice for short files, it rapidly becomes impracticable for anything larger. Even with small files you can get problems because an error on a previous line cannot easily be corrected. Fortunately there is a text editor supplied on the boot disc – the infamous 'edlin'.

I say 'infamous', because it was programs like edlin which brought the PC its unfriendly image. edlin is not a program you can just load up and type into and it has no word processing facilities. It is a very basic text editor and allows limited movement, copying and correction of text files. It is ideally suited to writing Batch files (which I will cover over the next few months) and numerous other text applications.

Firstly, copy the file edlin.EXE from your original boot disc onto your used one. If you look at a directory listing, you will notice that it takes up under 8k so it can sit quite comfortably on a disc without being noticed. There is also one other big advantage of edlin. Almost every PC will have a copy of it. It may be a bit limited and a pain to get used to, but if you can master it (even its basics) then you will be able to edit text on any PC.

To get the thing going you type in edlin followed by a file name. If the file already exists it will be loaded

into memory. If the file does not yet exist it will be created. Once you have entered edlin the now familiar A> (or C>) prompt will vanish and be replaced by an asterisk (*).

The program is difficult to use at first. There is no prompting for what to do and a knowledge of a few key commands is required to use it. For example, if you try to type in text at the prompt nothing will happen!

Before we start, a word about line length on a PC. It is set at around 253 characters in edlin, which is longer than one visual line. To start a new real line you press <return>. If, instead, you rely on the fact that you can continue typing, you will suddenly find yourself half way through a visual line unable to type further, and with warning bells sounding.

To demonstrate the program we shall write a file called DEMO.TXT. To start edlin editing it we type:

```
edlin DEMO.TXT
```

The message "New File" will be displayed above the prompt. You can try typing in some text now to show the effect of nothing happening! Once you have done that it is time to start the file. Type in the letter "i" and press return.

You will see now that the present line has changed. It now displays the number 1 followed by an asterisk. You can now type in text, each new line will revealing a new line number. These line numbers are not

actually part of the text but are there to show you where you are and so that bits of the text can be mixed by the user specifying a known range.

Type in a few lines of text (say 6) and then at the start of the seventh line, before any text is inputted, press <ctrl-C>. You may remember from last month that this command is used to abort. It is used here to quit from text input mode to the edlin command line, though not from edlin to the MS-DOS prompt. Using <ctrl-C> at the prompt will not return to MS-DOS either.

There are in fact two commands which allow you to leave edlin. The first will update the file you have been editing and then quit without a prompt. The second will check that you want to leave and, upon verification, will exit without saving the file. When you use edlin on a new file, if you quit without saving you will find no trace of the file on the disc. It is only created once saved.

At the prompt (after typing in our six lines of text), type in “e”. This will cause edlin to quit and the six lines of text to be saved. If you now do a directory listing you can see the file and if you want to view it you can use TYPE. Enter edlin again, using the same file (i.e. so we update an old file). To quit edlin without saving, you type in “q” at the prompt. The machine will request verification so that text cannot be lost accidentally or at least not as easily.

You will notice that the machine says “End Of Input File” above the prompt. This tells you that the whole file has been loaded into memory. This is because edlin will only load in text until memory is 75% full. It is still possible to view the other text however, but under the emulator, even on a 1M machine, you should be getting 500k+. which is a considerable amount of text.

Let's look now at the text we have loaded in. Type in “l” (as in ‘list’) and you will see the text you entered before, with the line numbers before it. You will notice only one line has an asterix after the number – this shows the current line. As with most of the other commands in edlin, a range can be set for the list command. A range is usually two numbers, the start and finish, separated by a comma. The range normally precedes the command, so to view only lines 2-4 we would type in:

2,4l

So far we have done little which we could not have done with the copy command. Editing a line is the main advantage, so we shall look at that next. You simply type in the line number you want to edit. It will then be displayed and, below it, another line for you to enter text. If you just press <return> the line will not be changed. However, if you type in text it will become a new version of the line. You can use the editing keys during this operation (see last month) which means that changing of spelling errors or addition of information is easy. This command will also change the current line to the line just edited.

Another function which is useful to have, is that of deletion. Deletion of characters or words can be done with the line editing but deletion of a whole line (or group of lines), can be done with the “d” command. Typing in “d” on its own will delete the current line and renumber all subsequent lines (so deleting line 4 will change line 5 to 4 and line 6 to 5, etc). This command does not ask for any verification so use it with care.

A range can also be used with delete. So, for example, deleting lines 2-3 would be by typing:

2,3d

The range function is actually more versatile than just deleting between two numbers, as either of the numbers may be omitted. Removal of the first number will delete from the current line to the end line. To remind the computer that the first number is missing the comma must still be used (in front of the end line number). Removal of the end number will only delete the start line, and is therefore the most commonly used version of the command. So to delete line 3 just type:

3d

If you happen to have deleted lines that you wanted there are two ways to remedy the situation. Firstly quit the program without saving (i.e. “q”) and then start up again and remember not to delete the lines. Alternatively, you can insert a blank line and enter the text again.

Insertion is done by the command “i”. When we used it before to enter our text it was an example of insertion (albeit a rather vague one). Another version of this command which we need is the one to continue inputting text. By typing in #i we will continue after the last line of text already inputted.

To insert text in the normal way, you simply precede the "i" by the line number at which you want to start inserting. If you want to place lines between 2 and 3 you would type in 3i. Again you can continue writing text until you press <ctrl-C>. If you try it and list the text, you will see that the line entered is now

between the old lines 2 and 3 and that everything from this line onwards has been renumbered.

Next month we will look at batch files and will hopefully find that what we have done this month will come in handy. In a later article I will return to edlin and talk about how to use cut and paste. **A**

Inertia from 4th Dimension

Emmet Spier

Inertia is claimed to be a totally original game with a huge landscape – well, although the landscape is huge, the game has an uncanny feel that it was inspired by 'Gyroscope'! Supplied in a CD type box that gave the impression that a 5.25" disc would fit snugly, the 3.5" disc rattled rather worryingly but the instructions were clear and comprehensive.

The blurb does not try to fob you off with some justification of the game but honestly claims that the aim of the game is simple – to collect all the pink tiles scattered around the landscape using a hovering yellow craft. Not quite that easy though because the landscape is arranged so that some tiles require lateral thought and others dexterity (some require both!) to collect the tiles without losing your lives by falling off the edge or down a hole.

The landscape is depicted in an isometric view with an attractive choice of colours and consists of hills, valleys, ramps, tunnels and even flats! Along with the pink tiles are various different novelty tiles that either act as an invaluable aid to obtaining the pink tiles (e.g. jumps and slow) or as a hazard to be traversed (e.g. ice and vertical speed tiles – I am still not sure what they do, but they certainly make things more difficult!)

For the first few attempts, I had severe difficulty with the keyboard controls (you can use the mouse but it does not give you the control required) careering off the edges of the landscape at every possible opportunity. Eventually I mastered a set of techniques that let me move rapidly around the landscape (although if I removed the brakes, an option in the game, it would be a completely different matter!) and set about exploring the landscape (careful use of the scrolling 3D map helps greatly when planning routes through new areas – but watch the clock!).

The game play is one of the best I have ever encountered. With each collected tile you gain an extra life (up to a maximum of twelve) and the countdown timer is reset. This ensures that you are never penalised in an area you know well by silly mistakes – but on the other hand losing all twelve lives is easy! The exploration is definitely the best part of the game – with the tile collection as a sideline – and as such I fear that the lifetime of the game is not that long. There are two levels, the first is fairly easy (to begin with) and it doesn't take long to master 80% of it (the rest involves some neat dexterous tricks I haven't yet mastered!) but level two is far more fun (and about twice the size – BIG!) and puts you in the thick of things straight away. Accompanying each level is a different sampled music track, both of which are good and quite likeable for the first couple of times round! (The music, as the sound effects, can be turned off.)

There are a few gripes: the scrolling occurs in half screenfuls at a time and although smooth can be disorientating. Worse still though is that the game ignores keypresses during the scrolling which can cause you to fly off the edge of the landscape at high speed!

A more serious gripe is that the game is copy-protected in such a way that it is not installable on a hard disc (drive zero must also be selected). The protection is hardly worth the effort and anyone who is confident with SWI's (SYS in BASIC) can easily remove it to permit hard disc installation (I thought of giving details but considering the problems Paul had with Minerva over System Delta Plus, perhaps I won't!) There are a large number of Archimedes' hard disc systems because the Archimedes is greatly enhanced by the speed, so game manufacturers must take this into account because hard disc users find it a culture shock when they return to floppies (40 seconds rather than 4 in this case).

Overall, Inertia is a polished, enjoyable game with attractive graphics and good game play. It is fairly addictive but once you have completed most of each level it becomes a little tedious. Even so, it should see you and your friends through a good week or

two's worth of fun and perhaps 'Four Dimension' could be persuaded to release extra levels. Is it worth £20? Well, I would only give a qualified 'yes' because the game's lifetime is quite short, enjoyable though it is. **A**

Optimising 'C' Programs – Part 3

Keith Marlow

This month, I shall look into the area of optimisation with respect to the final code size. The final code size is taken to mean the minimum memory required by a program to execute without any errors resulting from a lack of memory. The optimisations presented below shouldn't adversely effect the overall execution speed.

What determines the final code size ?

The final code size of a program is determined by four factors:

- i) the number of machine instructions which make up the program proper
- ii) the storage required to hold global variables
- iii) the maximum space required by the run time stack (used to hold variables local to functions)
- iv) the memory dynamically allocated by flex (only applicable if running under the desktop)

Reducing the number of machine instructions

The main way of achieving this is to remove duplications as these obviously waste space. Firstly, I would suggest reading the section in my first article on removing unnecessary duplication (July 1990 p54), as the optimisations there will probably reduce final code size as well as increasing the execution speed.

The duplications we are looking for are duplications in structure. Two structures can be considered as duplications even if they use different variables, but these variables must be of the same type (they are passed as parameters to a function containing the common code). The example below shows what to look for:

```
char Aarray[50],
    Barray[100];
...
```

```
for (loop=0; loop<Aextent; loop++)
    Aarray[loop]=0;
...
for (loop=0; loop<Bextent; loop++)
    Barray[loop]=0;
...
```

As can be seen we have two character arrays which are being initialised to zeros, both using a for construct and only differing by the variables used. This means the common structure can be turned into a function:

```
void zero_char_array(char *array,
    int extent)
{
    int loop;
    for (loop=0; loop<extent; loop++)
        array[loop]=0;
}
```

and can be called as follows:

```
...
zero_char_array(Aarray, Aextent);
...
zero_char_array(Barray, Bextent);
...
```

As you can see, this has the desirable side effect of making the program more readable.

The above could be further reduced by observing that the function `zero_char_array` duplicates the effect of the `memset` function supplied in the standard library, i.e:

```
...
memset(Aarray, 0, Aextent);
...
memset(Barray, 0, Bextent);
...
```

Using the `memset` function also has the advantage that it is part of the C shared library, so that if the program is linked with this, it won't take up any space in the program proper.

I would suggest if you didn't recognise this use of `memset` that you have a read of the pages 167 to 210 in the Acorn ANSI C Release 3 Manual. They describe in detail the functions implemented in the ANSI standard library. It is quite possible that you could be 're-inventing the wheel' by not knowing what functions are available in the library.

Reducing the storage required by global variables

The only way to reduce the storage used is to make sure that global variables are only used to hold global data. By global data, I mean data which is used throughout the execution of the program. Data structures which are only used during certain points of the execution are better declared dynamically (i.e. by `malloc` or `flex_alloc`).

Reducing the maximum run time stack

This, again, can only be reduced by declaring variables for the length of time they are used. For example, look at the following function:

```
void a_function( void )
{
    char temp[500];
    ...
    another_function();
}
```

Looking at `a_function`, it can be seen that, for the duration of the function, the array `temp` exists on the stack. This means that when `another_function` is called, `temp` will be preserved on the stack, despite the fact that it won't be used after that call. The way around this is to do the following:

```
void a_function(void)
{
    {
        char temp[500];
        ...
    }
    another_function();
}
```

By putting `temp` in a block of its own, it will only exist in that block, so when `another_function` is called `temp` won't exist, thereby reducing the stack requirement by 500 bytes.

Reducing dynamic memory allocation

As mentioned previously, the only effective way to reduce the allocation required is only to have storage reserved for the time it is required.

Reducing the memory requirements of a C desktop application

Here are a few tips which should help reduce the memory required by a desktop task:

- **Only set up a dialogue box when it is required.** This may seem common sense, but it is amazing the number of people who still insist on setting up all their dialogue boxes in an initialisation routine when there is no need to do so. All that is needed is to first initialise the `dbox` object pointers to `NULL`, i.e:

```
dbox_dbox_info = NULL;
```

and, where you need to display the `dbox`, have something like:

```
switch(hit[0]) {
    ...
    case 3 : /* information window */
        if(dbox_info==NULL) {
            dbox_info=dbox_new("Info");
            set_up_dbox_info();
        }
        dbox_show(dbox_info);
        break;
    ...
}
```

and where you need to close the dialogue box have:

```
switch(dbox_get(dbox_info)) {
    case dbx_CLOSE : /* cancel */
        dbox_dispose(&dbox_info);
        break;
    case 0 : /* okay */
        copy_from_info_dbox();
        dbox_dispose(&dbox_info);
        break;
}
```

The same treatment can be given to `txt` objects.

- **Be careful in your usage of the RISC-OS library.** The RISC-OS library has the annoying habit of turning a hundred line C program into about 50k of object code without any indication of where the extra code came from. Take the little program below

which just calls three functions from the RISC-OS library:

[illegible]

Looks innocent enough, doesn't it? If you compile it and link it, you will find that it takes up 27k!

If you remove the calls to `wimpt_noerr`, the program is reduced in size by 18k! It would definitely be cheaper on memory to write the `wimpt_noerr` routine yourself, possibly using the `SWIWimp_ReportError`

which does most of the work for you. (If anybody in the know knows why this happens, I and many others would be glad to hear about it.)

As can be seen, using the RISC-OS library is only worthwhile with large applications which make heavy use of it.

- **Combine small applications** – If you have a few small applications which use the RISC-OS library, it would make a lot of sense to combine them into one big application. This may seem crazy but if the programs are well written it shouldn't be too difficult. The only problem area would be the iconbar icon, as you could either have an icon for each independent application or one icon which can be easily changed to suit the desired application (possibly from a common submenu).

Future articles

If you have any problems, queries or suggestions for future articles, I can be contacted on Archive BBS (user number 224) or at 21 Courtenay Close, Bowthorpe, Norwich NR5 9LB. **A**

ArchieTeX

Alexander Jung (West Germany)

This story started some time before I had my first contact with an Archimedes. I had to write a paper on a physics project for the university, which demanded lots of equations and graphs. My adviser told me that TeX would be the only program which could do the job. I tried and the result was excellent (the marks also!).

Aside: TeX is pronounced 'tech': the last letter is a greek Chi, which could not be typeset on most computer systems and therefore led to that unusual use of upper and lower case. (*You mean it should be \textit{TeX} ?* Ed.)

How does it work ?

TeX is not a WYSIWYG program, although it is a special kind of a DTP-Program, which could be best described as a text compiler. The text has to be edited first on any editor you like (I use Twin). The file you create will consist not only of pure text, but also some commands which deal with font changes, headlines, pagestyles and such like. These commands are also entered as plain text with a preceding `\` to

identify them—the whole command system is similar to the textboxes in !Draw, but extended.

They also cover, besides these items, topics like formulae, tables, figures and programming. Since TeX is fully programmable, you can achieve every (really every!) desired effect even if it is not supported from TeX itself, by a little program in your text. Here is an example to give you an idea of these commands:

$$\int \frac{(ax+b)^n}{\sqrt[n]{(n+1)a(ax+b)}} dx = \frac{(ax+b)^{n+1}}{(n+1)a\sqrt[n]{(n+1)a(ax+b)}}$$

This sequence is not actually written in plain TeX, but in a macro-package called LaTeX, (*which suggests the pronunciation 'tex' rather than 'tech'*) which expands the original facilities. The equation can be achieved also in plain TeX, but it requires more effort. This particular set of commands produces:

$$\int \sqrt[n]{ax+b} \, dx = \frac{n(ax+b)}{(n+1)a} \sqrt[n]{ax+b}$$

Things like proportional spacing, indenting, footnotes and most other features you can think of are done automatically.

The next step is to run TeX with your text/commandscript and hope that not too many errors will occur, like forgotten brackets and similar things.

TeX produces at least two output files – a log file which lists errors and a dvi file which represents the document at this stage.

The log-file not only lists errors, but also tries to explain them as far as possible and gives exact error-positions in the text.

The dvi file describes what to print and where to print it on the pages (similar to text in !Draw-files). This description is device- and computer-independent. There is only the problem of file(-system) transfer, if you want, say, to print your ArchieTeX dvi-file on a laserprinter which is connected to a SUN workstation. Apart from the filesystems, the commands in the text files are also compatible on every implementation of TeX from Archie to IBM and many others.

The dvi-file is normally used as the input for a device driver, which has to calculate the bitmap image, or the postscript description from it. (It does the same task as the fontmanager and the RISC-OS printer-drivers.)

ArchieTeX in special

Five days after I sent out my order to TooLs GmbH (you always seem to get this nasty mixture of small and large letters in the TeX world!) I received a flat package, which contained six discs and a 54-page English installation manual (typeset in TeX).

The source text of TeX, written in Pascal by D.E. Knuth, is public domain but those who implement it are allowed to make a charge for converting the program to a particular computer, so that in this case you pay £99 (£69 for education) which I would call excellent value for money, as the most recent version (2.93) has been converted (version 3.00 was finished by D.E. Knuth this year but implementations are still rare). The program is not copy-protected, but every one has its own serial number, which is coded in the program too in a secret place. The discs contain TeX, the dvi-driver, LaTeX and BibTeX (a useful macro package and a bibliography database program

at no extra cost) and the fonts for my NEC P6 in 360x360 dpi resolution (you need to specify your printer to get the right fonts).

The second disc contains a program called Tasktool, which allows you to use the command line interpreter from the desktop. TeX and the dvi-driver are presented in RISC-OS application directories but only the device driver supports multitasking. As you may have guessed from the above, TeX needs a lot of memory but it will work on a simple A310.

You need 761kbytes to run the main program, so you have to unplug every unused module if you have only 1Mbyte. The programs are compacted on disc, so that you do not find yourself endlessly swapping discs. The whole system which is needed to run a document fits on two discs: one disc with TeX itself and one with the devicedriver. A little disc swapping may be necessary at printing time with the dvi-driver, when you are using many (>10) different fonts – different sizes are counted as different fonts.

The dvi-driver supports 11 different printers and a preview function on screen. For compatibility, it uses not the Archimedes outline fonts, but compacted bitmap fonts which represent the standard in the 'TeX-world' (and can be swapped without any problem). There is a program around called "META-FONT" which produces from an outline description, the font files in any desired size and form.

On a 1M system, you have to tell the driver to cut your page up into pieces (up to eight) just to save memory for the fonts but as I have expanded now to 4M, I don't need any segmentation any more. The printing itself is nearly as fast as the RISC-OS drivers, but with the selectable halfspeed, the quality of the output can be better than a laserprinter (only on 24pin), as it prints every line twice with a micro step between.

Compared to other machines, ArchieTeX is extremely fast (naturally!) – about four times faster than on the Atari ST and six times faster than on a IBM PS 2/30. The only computer I know, which is a little bit faster in TeX is a SUN 3.

I should mention that the manual is hard work for a user who has not had any contacts with TeX on other machines, but many of the difficulties arise from the style of TeX and the filesystem on the Archimedes, which has no extensions. Extensions are used to

distinguish between the different files of one document. This problem is solved by using `example.tex` and `tex.example` as synonyms.

The 'style' of TeX may be a little bit hard to understand to a user, who just knows about using the desktop and RISC-OS, as TeX comes from the 'big' Computers (Minis and Mainframes) where most jobs are done on text-terminals. TeX itself does not use any graphics at all – it can just be used from the command line although it is in an application directory (I modified the `!Run-file` to use it with `!Tiny-Dirs` and dragging of files). However this does not say anything about the resulting document: I do not know any other program (Archimedes, PC, Mac or other) that can be used like TeX and gives you that output quality.

Finally, I would say that TeX on the Archimedes is a high standard program with excellent performance which ought to be integrated a little bit more into the Archimedes world. For that I would need a converter program from dvi to Draw (using suitable Outline-

fonts) and a programmable Window editor (EMA-CS?) to give the system a little bit more convenience.

Some small errors are still to be found in the dvi-driver but they are really not serious (things like unusable quit-boxes, totally writeable menu items and no possibility to cache the loaded fonts) and most of them arise from my personal needs.

Lastly, here are details of two books, which explain the use of TeX in detail:

i. Knuth, Donald E: The TeX book, Addison Wesley 1990:

- this is the standard book on TeX, written by the author of TeX itself and covering everything a TeX user needs to know.

ii. Schwarz, Norbert: Introduction to TeX, Addison Wesley 1987:

- this book is meant for the user of TeX, who does not want to know much about macro-programming and internals. Many examples and applications are given in this book. **A**

PenDown

Dave Morrell

PenDown is a word processor for children. It appears to be completely RISC-OS compatible. Double clicking on it leaves the PenDown icon sitting on the icon bar allowing other programs to be used. Clicking `<menu>` over the icon gives four options. "Info" gives a "Document Processor and Language Environment", "Fresh Start" gives a new document window to work in, "Configure" allows the configuration of PenDown to suit the user and "Quit" removes the program from memory.

For younger children of say lower junior age (7 to 9 year olds) the program may be easier to use if configured as a very simple word processor. This would give a choice of large or small print, black or red print, centred or left justification and start and stop underlining. These are available from the function keys along with turning the page forwards or backwards and saving the document. This gives a fairly basic wordprocessor which most youngsters would pick up quite easily. As they progress, the extra features available from the menus using the mouse can be explained and brought into use. Any

or all of the options on the main menu, the icons or the ruler can be configured in or out as required.

Along the top of the page is a set of icons and a ruler. The ruler units can be changed between cms/mms, inches and points, the default being cms/mms. Right and left margins, which are shown by two downward pointing arrows, can be moved by dragging with `<adjust>`. Any number of tab stops can also be put in which are also shown by downward pointing arrows. The set of icons along the top allows the user to change type, style and size of the font, the colour of the text, underlining, super- and sub-scripting, type of justification, line spacing and case change. These can be applied to all or part of a document. The final two icons allow extra rulers to be inserted into the document and the pages to be cycled through.

Clicking `<menu>` whilst the pointer is in the page area brings up the main menu. As well as giving information about the document, the menu gives the usual filing options for saving as a text file or as a PenDown file, a printing option which uses the RISC-OS printer drivers and a page sub-menu which gives a choice of overwrite or insert mode as well as

setting the page size. Also on this sub-menu are three options which will not be available until the final release: headers, footers and parade. The final options on the menu are Edit which is concerned with the deletion and manipulation of text and Search and Replace which is a quite comprehensive option. This can be set to search for whole words only, a useful option with children, as it then does not find "words within words". Again, the Search and Edit options can be applied to all or only part of the document. They can also be used selectively or globally.

PenDown utilises the Acorn Font Manager and is thus capable of producing excellent hard copy even from a cheap 9-pin dot matrix printer. One comment I got from a child using the program was, "Hey Sir! I don't half like the print!". The print in use at the time was Jumbo, one of three fonts that Logotron have provided along with Acorn's Trinity set. Jumbo is a primary script look-alike which is easy to read both on screen and on paper. The others are Relief and Lineout which are probably more useful for the design of posters, notices, labels and headings. All three appear to be based on fonts from the original PenDown for the BBC and Master series. Hopefully there will be more in the pipeline. The fancy border fonts would be especially useful.

In using it with children aged eight to eleven, I did come across a few minor difficulties. The caret is rather tall and the children found it difficult to place

it accurately when editing. The point of the arrow needs to be level with the top of the line that the caret is going in before pressing <select>. Most of the children put it level with bottom of the line, as I did.

We also found that after deleting various parts of the text some odd bits were left on screen. The only way I could find to get rid of them was to scroll the screen fully from top to bottom. When changing font size for the whole document to a bigger size, the document sometimes over-ran the bottom of the window and appeared over the icon bar. Again this was removed by scrolling the screen. Hopefully these two "features" will not appear in the final version.

One useful feature of the older version of PenDown which I would like to see implemented is the dictionary facility. There is no mention of this, that I can find, in the manual. I think this will be a big minus point for previous users of PenDown.

In spite of this, my overall impression of PenDown is favourable. The three groups of children I have used it with coped reasonably well despite having to use a new A3000 which they had not come across before. They produced A4 sized posters/adverts in under 15 minutes, plus printing time. They also produced some group stories about outings they had been on recently. I can see this program finding favour in many schools, particularly if Logotron support it as well as they did the older version with extra fonts and borders, etc. **A**

Stig of the Dump + The Worst Witch

Philip Green

I have never read either of the books on which these 'games' are based but my local public library has spoken versions on cassette. "Stig of the Dump" runs to 3 cassettes with 3 hours and 45 minutes of playing time and "The Worst Witch" is on a single cassette with 1 hour and 5 minutes of playing time.

Both games come in a clear plastic A5 holder with a Teacher's book, two floppy discs and other material to be detailed later. "Stig of the Dump" was designed for 9 to 13 year olds and "The Worst Witch" for junior school children.

Stig of the Dump

"Stig of the dump" shows its age a bit (copyright

1963): for example eight year old Barney has a moneybox containing "3s 3d" (which was quite a sum of money for an eight year old in those days but means nothing to children nowadays) and Barney's sister goes on a fox hunt without even a mention of hunt saboteurs. The story adheres quite firmly to traditional role models: Barney, the hero, has lots of adventures with his friend Stig, while his sister (age unspecified but older than Barney) likes ponies and shopping. Apparently, the children spend all their school holidays with grandmother somewhere near Sevenoaks.

While grandmother and sister go about their business, Barney explores a nearby chalk quarry, now designated as a local refuse dump, which is being filled in

with all sorts of refuse. There he meets a mysterious character named Stig. Stig is presumably Neanderthal and lives in a tunnel he has dug for himself in the side of the old quarry. Together Barney and Stig create a chimney with several old tin cans by removing top and bottom of the tins and inserting the cans one into the other to form a length of tubing, and a window for the 'cave' by putting a number of empty jam jars in a gap in the wall and filling up the gaps with mud to keep out the draught. Stig demonstrates how he starts a fire by rubbing a stick on a block of wood and makes a knife from a piece of flint.

Together they chase off a pair of burglars who had plans on grandmother's silverware and manage to recover the burglars' loot from several houses in the neighbourhood. At the end, the story takes a sudden "sci-fi" turn and the children find themselves in the distant past where they witness and even participate in the erection of a stone which forms part of a circle along the lines of Stonehenge. This is the only time Barney's sister takes part in one of the adventures.

Documentation

The teacher's notes include a map with details of what to do at certain locations. The game also involves going back to bed and to sleep when the tasks for the day have been carried out. This is all in accordance with the book as the story takes place during the course of a year, giving the teacher ample opportunity to dwell on seasonal changes of weather and landscape.

A National Curriculum for Science Flowchart is also included.

All in all a very sensible piece of software for classes of children between 9 and 13 years old, with plenty of chances to tie the story in to various aspects of the National Curriculum, especially – but not just – the science side.

The Worst Witch

Miss Cackle's Academy for Witches is, as the name suggests, a school for aspiring witches – a boarding school no less! The heroine is a first-former named Mildred Hubble who always gets things wrong and gets herself into trouble until she inadvertently saves the school from a hostile takeover by the headmistress' evil sister who is also a witch.

I completed the game using only a fraction of the vocabulary mentioned in the Teacher's Book. I noticed some minor errors: Lily (as in "there is a frog on a lily leaf") is spelt with three 'L's. When flying your broomstick you are offered the choice of going forward, back, left, right, up and down but if you try to go up the program says that is not possible.

The game follows the story fairly closely. The worst that can happen to you if you do something wrong is that you find yourself back in your room and have to go and collect various items again before being able to continue. Pupils are advised not to try to turn the headmistress into a frog. (*Yes, but it's very tempting to try!* Ed.)

All in all a very well-made program. The original startup disc cannot be copied by normal means or even with the Archive disc copier from Shareware disc 2 but it does carry a 3-year guarantee of free replacement in the case of corruption. What Sherston would charge after the three years is not mentioned. The user disc can be copied to hard disc, even SCSI. With some careful doctoring of the BASIC program "WWPROG" on the startup disc, you can get the main program to run from hard disc and even set up a few function keys for the most frequently used instructions ("take", "examine" or, for single key directions, "wlm", "nlm", etc). Working from hard disc greatly improves the speed of loading sprites and the user disc should certainly at least be backed up.

The Teacher's book has not been rewritten for the Archimedes/A3000 version but a separate sheet containing Archimedes' version notes must be correlated with the instructions in the book. The book contains useful tips for completion of the adventure and teachers must familiarize themselves with the game before using it in the classroom. Also included are four pages (A5 size) of ideas for further work in various subjects and a list of books and music concerning witches and witchcraft. My favourite book about witches "Wyrd Sisters" by Terry Pratchett is sadly omitted from the list. (*Is this really what we want to be teaching our children?* Ed.)

A "National Curriculum for Science Flowchart" is supplied with the package summarizing all the aspects of the National Curriculum covered by the game or that can be tied into the game.

Also included are a card with vocabulary and a smallish poster-sized artist's impression of the playing area.

If you know what to do, where to go and are quick at typing, you can complete the game in less than five minutes but in normal classroom conditions the

game will take quite some time to complete and offers an enormous number of possibilities for teachers.

The two programs are £21.50+VAT and £25+VAT respectively from Sherston Software. **A**

Primary Integrated Project Planner

Doug Weller

What can computers do to help teachers implement the National Curriculum? One of the most time-consuming aspects of the National Curriculum is that it requires teachers to relate their everyday practical classroom activities to seemingly endless numbers of attainment targets and levels. To help teachers do this, PIPP was created – by teachers, I should add, not by computer boffins.

PIPP, according to Cambridge International Software, is a National Curriculum database designed to help teachers plan and relate cross-curricular projects to the National Curriculum creatively and easily. The program includes levels 1-5 of all the current attainment targets for Maths, English, Science, Technology, History and Geography, plus a project on 'Ourselves' with 82 classroom activities and their associated National Curriculum statements.

This means that when trying to plan a cross-curricular project and relate it to the National Curriculum, the busy teacher no longer has to sort through 6 thick folders but can use the power of the computer to do the searching. Or, starting from a classroom activity, a teacher can search quickly through, for instance, the English National Curriculum to see what topics have been covered in a child's discussion of a poem or painting, and print them out quickly.

The authors suggest several other uses, including the ability to extract statements quickly from National Curriculum documents for discussion at staff meetings; the compilation of statements from all the documents on particular themes, e.g. mapwork or reference skills; the production of record sheets, etc.

Facilities

PIPP allows the user to go directly to an activity or National Curriculum reference by number or to search by keyword and to add, delete or amend activities and references. The search facility allows you

to search for words either as individual words or as part of a word e.g. searching for 'magnet' either as the word itself or as part of another word such as 'magnetic'. You can also browse through attainment targets and classroom activities. The package also provides help sheets for several of the attainment targets most commonly used. These are provided as a quick reference guide and are also contained in the database. Using the print facility, you can either print out individual statements or a group of statements associated with an activity.

PIPP in use

The basic philosophy behind PIPP is that, in planning a project on, for instance, the Vikings, I would start by examining the Programmes of Study for all the core and foundation subjects as well as school schemes and, with these in mind, design a series of classroom activities. I would enter these into PIPP and then, using either the search facilities or the PIPP help sheets, look for appropriate National Curriculum statements which I could then enter into the database. When finished, I could print these out and add any other comments – giving me a working classroom aid related to the National Curriculum.

Conclusion

This looks like an extremely useful, easy-to-use piece of software. National Curriculum-matched projects on homes and weather are already being written and extensions to include a word processor facility, a link with Programmes of Study and other developments are under consideration. My main complaint in using it so far is its lack of WP facilities and its inability to export data to other WP's. This is, in part, due to the high commission that CIS has to pay to HMSO for the National Curriculum references, which is an absolutely ridiculous situation! This may change as there is considerable pressure on the government to make the national curriculum public

domain. PIPP takes over the whole computer but this does mean that, without having to learn the RISC-OS interface, a teacher should be able to use PIPP easily.

All in all, this looks like an extremely useful piece of software, particularly if the suggested enhancements are made. The project provided on Ourselves looks extremely useful over a wide age range. Plans are

also under way to enhance PIPP so that it can be used to make computerised record sheets for individuals, classes or schools. A secondary version of PIPP is also planned (Key Stages 3 and 4).

PIPP from Cambridge International Software costs £39.95 inc VAT for the system disc and the "Ourselves" project. (£37 through Archive.) Future project discs will be around £15 to £20. **A**

Computer Accounting for Small Traders

Andy Cowling

Despite the ever increasing software base available for the Archimedes, one area that has remained sparsely populated is that of Business and Accounting packages. CAST1 (Computer Accounting for Small Traders) from Softrock Software is aimed at this market.

The software comes packaged with a 100-page A5 manual and a single disk. CAST1 is written in BASIC and is not copy protected. The software is not a 'true' RISC-OS application in that it is not multi-tasking and does not adhere to Acorn's "Guidelines for Developers", though it can be invoked from the desktop. Installing the software is straightforward, though the suggested method of creating backup files entails maintaining an extra disk exclusively for this purpose. (Backup files can also be kept on the working disc if preferred).

CAST1 maintains a set of system defaults which should be set up initially. This includes setting the printer characteristics, a password to restrict access to the books and analysis codes. The password is fixed at 6 characters in length and cannot be disabled. CAST1 output assumes your printer has a condensed print mode (typically 132 col) and does not make use of the RISC-OS printer drivers. Up to 26 analysis codes can be created to track different categories of transaction. A long (up to 32 characters) and abbreviated (up to 7 chars) description is stored. Unfortunately, the analysis codes apply to all 10 books available to CAST1 and they cannot be allocated on a per-book basis. Each book is allocated a title and company name (which can be altered). Again the company name would be a candidate for a system rather than a 'local' default.

Maintaining accounts using CAST1 is done by creating entries within a book. Entries consist of 4

fields (suggested use is to record the cheque number, invoice number, supplier and description of goods) and is either a payment or a receipt. Each entry can be associated with up to 4 analysis codes for subsequent cross-referencing. The VAT element must be entered by the user. An obvious improvement would be for the software to take the gross amount and calculate the appropriate net and VAT amounts. Also, for small companies not registered for VAT, it would be better to have a system default to disable VAT calculations as repeatedly entering 0.00 will soon become tedious.

CAST1 also has a facility for recording regular transactions that are made every month (e.g. direct debits and standing orders). These so called 'automatic' entries are also limited to 26. The over simplistic method of handling days within a month means that only numbers up to 28 may be entered to guard (to quote from the manual) "against a 31st of February"!

Finally, when a month's transactions have been entered, a close month command is used to print the financial summary. Unfortunately, there is no way to preview the statement on the screen to check for any omissions or errors before the printout is generated. Worse still, there is no checking as to whether the printer is available and on-line.

Month-end printouts consist of a summary of all receipts and payments and a final analysis of all transactions (cross-referenced with the analysis code) with totals. In addition, lists can be printed of all currently defined automatic entries and analysis codes.

CAST1 does not assist much with the eternal question "Why doesn't the bank statement agree with my calculations?". Instead of helping to mark un-presented cheques and uncleared funds to reconcile the

statement with CAST1's summary, the user is advised to do this job with paper and pencil!

Producing the quarterly VAT return is also left to the user – you have to tot up the appropriate fields from the printouts. Again this could easily be improved to calculate the VAT summary from the designated quarter and produce a book close to the format required for the actual Customs and Excise form so that the user is merely left to transcribe the figures into the appropriate boxes.

One of the most irritating features of CAST 1 is the continual reminders in the manual to save changes. The software always asks whether the current book should be saved even when no changes have been made. The manual could be improved. Condensed

print on A5 paper can be difficult to read. There is no index and provision of a more detailed tutorial would be useful. The manual is littered with typographical errors that a spelling checker (or careful proof reading) should have eliminated.

However, CAST1 does provide a means of managing accounts for a small business and the author promises 'free upgrades' and a spiral bound laser produced manual when (if?) sales of CAST1 produce enough revenue. Presumably, these improvements would entail converting CAST2 into a RISC-OS multi-tasking application and (hopefully) adding changes to make the handling of VAT more user-friendly. Until this is done, I feel CAST1 doesn't offer enough facilities to justify its cost of £30 (particularly as there is no VAT element to claim back!) **A**

!Slideshow from 628 Software

Eric Cooke

Getting the machine to work while you just sit and watch appeals to me and if it's easy to set up, so much the better. The !Slideshow application does just this by letting you arrange and display a sequence of pictures (sprites). Too simple, you may think, but the real fun is to be found in the excellent user interface and in the choice of transitions from one picture to another; wipe-ins, fades, venetian blind effects, to name but a few.

The package is not copy protected and it uses RISC-OS. It runs in mode 15 but can display a combination of mode 15 and mode 12 sprites in the same sequence – all with the same palette as for mode 15 (the transitions would be a bit hairy otherwise). A neat little manual is provided which I could understand. Displaying the directory on the disc supplied and double clicking on the !Slideshow icon, gets the program installed with its icon on the iconbar. Warning is given if you are not in mode 15 and the program itself selects mode 15 if you continue.

The usual click on the icon gives you the working display which consists of two linked windows; the top window containing three rectangles and the lower window (with horizontal scroll bar) containing a sequence of rectangles ready for your pictures and your choices of transition between them. A picture is added to the sequence by dragging its icon from one of your directories into !Slideshow's main

window. It is then displayed at quarter size in the next available rectangle. Dragging another sprite icon, as before, extends the sequence – easy! – and the program then automatically gives you a transition rectangle between sprites. I enjoyed trying out different transitions before adding in the next sprite.

There is a wide choice of menu based options to allow editing both of the arrangement and of the transitions. Reporting of the total playing time and amount of free memory is done in two of the rectangles in the upper window; the third is a PLAY button. I liked the reporting and the straight forward access to information throughout.

You select the duration for which each sprite is to be displayed. Alternatively, you can also choose a user-timed option. When the display pauses, pressing <select> makes a pointer appear over the picture being displayed so that, as you talk, you are able to point to different parts of the picture. Then <menu> or <adjust> causes the sequence to continue.

The inspiring sequence you have constructed is easily saved for replay some time later. Run-only sequences can also be saved for public distribution so that people without !Slideshow can benefit from your creativity. Sprites are automatically compressed but the extent of compression obviously depends on the particular sprite. One of my 160k imported GIF sprites barely compressed at all while another one

compressed to 52k. The number of sprites in your display sequence depends on this compression, your machine's memory (we tested it on a 410 upgraded to 2M) and the disc space available for saving your sequence. Hit PLAY and watch it all happen.

What is missing? The main limitation is that once a pixel appears on the screen, it does not move. Blits

and redrawing of the screen may be a pain but should be possible on the Archimedes. A nice touch would be the option to include music to accompany the display or even a commentary!?! If you need an automatic display of sprite sequences, buy !Slideshow. If we encourage Paul Green, the author, we may get all this and more. **A**

Competition Corner

Colin Singleton

Prime numbers have featured in this column before but this month's competition concerns primes for their own sake. The articles by Brian Cowan (Archive 3.4 p29) and Paul Denize (3.7 p41) may be helpful.

The largest number which can be held in the standard Archimedes' four-byte integer variable is $2^{31}-1$, i.e. 2 147 483 647. Those of you who tackled the Perfect Numbers problem a few months ago will have discovered that this number is prime.

What I would like to know is how many primes are there from 2 to 2 147 483 647? This may be rather a tall order, so I am asking you to list the numbers of

primes less than 2^N , for $N=2$ (2 primes), $N=3$ (4 primes), as far as you can go.

The winner will be the one who produces the longest list. Run time will be used as a tie-breaker if necessary. Please let me know if you are using ARM3.

Entries and comments please either via Paul at NCS or to me at 41 St Quentin Drive, Sheffield S17 4PN.

Entries are still coming in for the Cities Wordsquare competition but still no perfect entry! I'll wait a little longer.







Interest in the July (circles) competition has been somewhat less than ecstatic. Was it too tough? **A**



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Careware & Shareware List

Shareware

- 0: 49 (now fairly ancient!) graphics demos plus "Menu-Master" which allows you to create and manipulate demo sequences.
- 1: MenuMaster with 7 graphics demo programs plus Life, Mandelbrot, European geography, Structured directory lister.
- 2: DFS reader, backup and archiver, 9 graphics demos, 256 colour sprite editor, CMOS ram editor, Disc copier, LQ printer font definer, Matrix functions, Memory mappings & Vector listings, BASIC fast screenload, Connect four, Mastermind, Solitaire and Star Trek.
- 3: Epson printer setup, Underground map update, CMOS editor update, SD+ to FWPlus mailshot, Audio tape inlay printer & database, Videotape database, Liberator file transfer, Monitor pattern generator, Contours demo, Graphics demo, VTR count-down clock, ARC file compressor, Flip, Night Shooter, Let Drop.
- 4: BBC font character editor, Bird watcher's database, 3D Mandelbrot (BASIC), Graphical shape transformations, 8 "pretty patterns" programs, Hidden line graph plotting, FWPlus printer driver editor, File transfer and sorting utility, Patience, Golf.
- 5: 51 pieces of music, (classical and modern) for the Maestro.
- 6: Various utilities and printer drivers for First Word Plus
- 7: Disc database of Archive magazine plus ArcScan data files for Archive magazine.
- 8: Yet Another Invaders Game (YAIG) with excellent sprites and animation.
- 9: Various graphics demos, file utilities (EXALL, disc tree printer, filetypes and 'filedo' utilities and a disc recoverer), mode 15 to 12 converter, palette converter (Arthur to RISC-OS), NEC printer utilities, two fast fade programs, System Delta Plus export utility, ADFS disassembler (Arthur only), Bank account manager and three games: 3D Breakout, Bowls and Roller-ball.
- 10: Address book database, 4096 colour selector, Expenses manager, Reversi game, Star Trek, 3D volumes of rotation and 29 astronomical programs.
- 11: 6 concerti in Maestro form—Beethoven, Chopin, Grieg, Liszt, Mozart and Schumann.
- 12: Rubik's cube, *settype and *stamp files from desktop, BASIC compressor, Sinclair QL disc reader, Central heating calculator, Cassette inlay printer, Floppy drive speed test, Address book.
- 13: Hard disc backup, Video database, Rubik's clock, Interrupt module, Dustbin, Outline processor, Mandelbrot, Calendar, Golf.
- 14: Artist Plus — 256 colour art package.
- 15: 14 graphics demos, two !Draw fonts, six !Maestro tunes, 20 sampled sounds.
- 16: (another) 256-colour art package, Psion Organiser link and the latest version of YAIG.
- 17: Acorn's RISC-OS extras disc: printer drivers; !65Host; NetFS, NetPrint, NetFiler and NetStatus; IRQ latency fix; hourglass and sound modules; WimpUtils module; Clib 3.50, Colours 0.52 and FPEmulator 2.80.
- 18: Draw files: 3 drawn fonts and various coloured pictures, several demo programs, Space battles, Rocks (asteroids), Maestro files (classical & modern), Imperial College's HOPE language interpreter.
- 19: Home accounts, Hypertext application, Scientific calculator, Dustbin, File utilities, Disassembler, RS423 downloader, Othello, Space invaders, Text adventure, Desktop demo.
- 20: Four demos, Battleships, Solitaire, Arcterm 3.11, FormEd, DFStoADFS, ModeExtend, Sparkplug, Trash, VDUsaver, Keyboard=mouse utility, four C utilities.
- 21: AIM image manager, AIM <—> Watford digitiser, Translator (graphics file convertor), QRT ray-tracer, sample image files for Translator.

- 22: Impression utilities: Key strip draw file, Backup program, Letter dating, Access to extended characters. Line art for DTP: 8 !Draw fonts, 64 signs, map of Africa, 34 colour and mono pictures.
- 23: SoundTracker with tunes, Address book, File loading utility, Textprinter, SetType, Sparkplug, Using View on RISC-OS, Connect 4, Pelmanism, 3 demos: Scrolling text, Bouncing bars, Baby blues.
- 24: Bar chart generator, Simple database, 16bit SoundTracker music, Desktop option setter, Desktop graphics spooler, Screen modes 20/21 for NEC 3D monitor, Desktop options for Epson LX, Two games: Ballroom Blitz and Ladybird.
- 25: Maths Disc – Dozens of programs and procedures for maths applications.
- 26: Desktop phone book, PCB designer, Player for Maestro tunes (uses less memory), Voices and tunes for Maestro, Desktop file access editor, Program to display Draw files, Text adventure game.
- 27 – 29: Not available.
- 30: Soundtracker modules plus sound-tracker test program.
- 31: Editor for C, Graph plotter, Desktop magnifier, 2 demos, 'Secret Garden' adventure, Taipei Chinese game, BASIC program compressor, DFS reader/writer, Complete DOS filing system, BASIC access from desktop, Computer shutdown from desktop.
- 32: Lineart from various sources plus Sprite to GIF, Sprite to TIFF, !Translator, Teletext to sprite, Sprite mode converter, Screen mode info display, Impression key short-cuts, Convert spooled text for Acorn DTP, Text-only printer driver, Keystrip for !Draw, Palettes to improve LC-10 + Integrex output quality.

Careware

- 1: Calendar, Label printer, "Make" utility, Othello, Sliding block puzzles, 'Simon', lots of simple games programs and graphics demos.
- 2: Asteroids, Backgammon, Fractal curves, Desktop calendar, ARM disassembler, Disc editor (ADFS & MS-DOS), Icon for BASIC editor, BASIC program compressor.
- 3: Breakout, Fruit machine, 3D O's&X's, Forth language, Hard disc backup, Graphical file dump, 'Examine' for MS-DOS, Icon for BASIC editor.
- 4: Graphics animation, Serial link to BBC micro, !BIN – RISC-OS file deletion application, !PCdir – converts files to and from MS-DOS, screen blanking routine, WP file conversion routines, function key strip printer, some more tunes for use with Maestro and some desktop demos.
- 5: Printer buffer module, Sinclair QL utilities, four Overscan screen modes, KXP1124 driver for FWPlus, Presentation program (bar charts, pi charts, line graphs, etc), Teletext screen editor, BBC font designer, Key strip editor, 32,768 colour demo, GMA demo, Poker, Quartet (desktop game), Simon.
- 6: Application maker, StickyBD, Scientific calculator, Sparkplug, Desktop utilities, Wordpro/FWPlus converter, RFSmod for CC ROM module, 17 Maestro files (ancient & modern), Hangman (very graphic!), Connect 5, Polymos game.
- 7: !PCDir 1.00, Sprite <-> GIF, Amiga/ST/ MacPaint -> Sprite, Draw -> Meta-files, 12 BBC fonts, !Font-Ed, !Chars, Batch file printer driver, Printer buffer, Z88 link, File utilities, Desktop BASIC module, Jot pad, Application examiner, Low-memory screen mode.
- 8: Primary WP, another 256 colour art package, Desktop 'Life', Graphics demos, Mouse patience, Bat'n'ball game, 'Peggy', Maestro files, FWPlus file conversion, Disc formatter, Disc label designer, Line editor, Movable icon bar, 01 to 071/081 conversion, RMA manager. **A**

Fact-File

(The numbers in *italic*
are fax numbers.)

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